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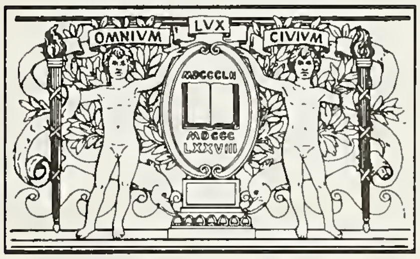

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FRAMEWORK OF OBJECTIVES
FOR
FORMULATION OF GENERAL PLAN

Boston City Planning Board

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FRAMEWORK OF OBJECTIVES
FOR
FORMULATION OF GENERAL PLAN

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Gwen Bell

Boston City Planning Board

February 1, 1960.

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GENERAL OBJECTIVES

The general objectives provide the basic criteria for guiding and judging the design for Boston's future. These objectives are outlined from the most general point of view to their specific definitions as they relate to each of the land uses. They fall into three categories, which may be called "development", "coherence" and "diversity". These, in turn, may be broken down into positive categories which specifically relate to the disposition of functions within the city. Thus, development breaks down into the qualities provided by convenience, amenity, health, safety, efficiency, and stimulus: coherence breaks down into continuity, adaptability and identity: and diversity breaks down into variety and choice.

To understand the implications of these goals for Boston's future it becomes necessary to analyze them at every level, in terms of each function, in relation to their present level of achievement, and finally how they have effected the design for the future.

DEFINITION OF OBJECTIVES

A. Development: The opportunity for individual development of all citizens of Boston and its region and the opportunity for the development of the environment to the fullest potential.

To a degree, the environmental surroundings provide a stimulant for the individual to grow socially, spiritually, intellectually, artistically, physically and economically.

The environment can be positively affected to maximize potential development through the attainment of the specific goals of health and safety, amenity, stimulus, convenience, and efficiency.

1. Health and Safety

These two goals together relate directly to the basic responsibility of the government to the citizens. It is virtually impossible for the citizen to develop, or in fact survive, if he is not in an environment conducive to health and if his first worry must be safety. To a great extent, this goals is achieved through the provision of the basic city services of water, protection, sewage, roads, etc. at high standards. Without the achievement of this goal, the city looses the basic qualities which make it habitable.

2. Efficiency

Efficiency is defined "the effective operation as measured by a comparison of actual and possible results; effectiveness as compared with the capacity to perform or with cost in energy, time, and money." Efficiency has implications both in relation to the individual and each regional, metropolitan, city, and community function. It becomes necessary to analyze each function both in relationship to the system and to the individual. For instance, the system of movement would be analyzed in terms of the time, energy, and money expended by the citizen in travel from one point to another, and also by the provision of particular modes within the movement system.

This factor, then relates to the development of the individual through making it possible to increase his capacity in

the performance of any one function. It also would allow the development of any system or functional area to the greatest potential under any given conditions.

3. Convenience

Convenience is defined as affording accommodation or advantage in the performing of some particular act or function. Specifically, it suggests that various functions should be analyzed in terms of their relationship to any particular activity of the individual. Then, upon analysis, that these are organized so that each person can carry out his many activities in an advantageous environment.

Convenience is extremely important in the development of the individual and functional areas of the city. While it is conceivable that development can be originally achieved in an environment of adversity or inconvenience--e.g. Horatio Alger, or the development of the automobile industry in Detroit--actually an accomodating environment can be much more conducive to social, spiritual, intellectual, artistic, physical, and economic development.

4. Amenity

While convenience allows accommodation for the development of various activities, amenity provides the quality of pleasantness in respect to situation, climate, and manner. It is extremely important to have amenity as well as convenience to attain development. In some cases one may be emphasized to the point of conflicting directly with the other.

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Then a value must be placed to determine which is the more important in a particular case. For example, it might be convenient for the place of work to be next to the place of residence. If the place of work were a church, a corner candy shop, or a library it might also concur with the amenable qualities of the area. However, if it were an industry with loud noises, vibrations, and heavy traffic, etc. it would probably be completely unamenable for the residential area. Such lack of amenity in this case would not be conducive to the social, spiritual, intellectual, or artistic developments of the inhabitants of the surrounding residences.

Amenity would call for the analysis of the relationship of those activities which do provide a pleasant situation for man undertaking various specific activities. Amenities are not always the same, however, thus it is also important to outline what are deemed to be amenities for specific cases. For instance, quietness is an amenity for man enjoying nature in open spaces, but the noise of a crowd may also be an amenity for part of an open space adapted to team sports. Another example is that of attractive views: this is an important amenity for a residence while it is less so in a factory where the activity of the individual is turned inward, with out time, opportunity or mood for enjoying a view. Thus, in plan, it is necessary to consider the various meanings of amenity for various activities and outline proposals according to them and the advantages which they might offer to alternative site locations.

5. Stimulus

Stimulus is that element of the community which causes the incitement of activity. It focuses on the living and changing aspects of the functions of the city, region and its citizens. Convenience and amenity alone do not bring the citizens to use the many facilities offered to them. There must be more -- they must also have that quality which invites people in. By doing this, the provision of stimulus provokes achievement, progress and innovation by the citizens and in the environment.

SUMMARY

Development itself, then is the expansion or growth process by which all elements (health and safety, efficiency, convenience, amenity and stimulus) are brought together. The concept of the general plan relates all these qualities to the development of man and the environment of Boston and its region. Both may be achieved by the unfolding or advance from lower to higher states physically, socially, and economically. The goal of development further demands that for man the environment should allow his advance from lower to higher states intellectually, spiritually, artistically, and socially.

B. Coherence: Coherent patterning of relationships between the individual's activities and the total environment in time and space.

This goal may be achieved through the application of continuity, adaptability, and identity in the ordering of the plan. These objectives demand that the realization of the plan takes place in time, i.e. that the plan is coherent from the

past into the future, and in space, i.e., that the plan is according to the scale and imageable with the individual and his activities.

1. Continuity

Continuity signifies coherence with respect to a series of changes. This may be no more than coherence of medium or means, as in the case of time and space. In such case, the continuities may be expressed in series of like units, as minutes or inches, whose mere repetition forms accumulative but still contrasting change. Another type of continuity is found in a more qualitative coherence by the uninterrupted persistence of some quality in any dimension continuous with reference to conjoint changing qualities.

Continuity in terms of a general city plan should be conceived in each of these repects. In time this would suggest continuity with the historical past; the preservation of the unique characteristics which still tie Boston to its origins and implicate it with the founding of the nation. This does not necessitate making a museum piece of every house at which Paul Revere called -- but in the preservation and continued use of those significant things which keep Boston in its historical context. This would, in a sense, be a limiting factor for each kind of functional development, so that it would not overwhelm or destroy the important qualitative coherence with the past. Security and faith in the city as a unit may be achieved through the implementation of continuity in time through the achievement of stability into the future from the past. In this sense it is

necessary to emphasize the present qualities of the city and planning for their continuity into the future.

Continuity in space is defined by the eye as it moves. This can be achieved by relating the size and shapes of areas to the speed at which the eye travels through it. For instance, continuity within a residential area may be keyed to the speed of the pedestrian or slow moving automobile - - with more concentration on detail in a limited area while the continuity of space on a park way would be related to perhaps less detail in the adjacent areas but the expansion of the area for a longer distance.

Qualitative continuity is found both in time and space and provides the element which differentiates one area from another in both elements. For instance, Beacon Hill has maintained a different qualitative continuity from the Back Bay and the North End while being near them. It becomes necessary in making planning decisions in regard to continuity to make value judgements on the quality of areas in either maintaining a continuity with the present or achieving a new quality for future continuity.

2. Adaptibility

In a nation and a city which is undergoing change at a rapid rate, adaptibility (used interchangeably with flexibility) to future change becomes significant. It has been suggested that to achieve continuity in the future, it is often necessary to effect a change in time, space, or quality. These changes are

sometimes predictable in the short range (say around 5 years) but unpredictable and unforeseeable in the long range. Thus, a plan which accommodates the unpredictable is more likely to remain coherent in time and space than a plan which sets a rigid pattern. There are several ways of achieving adaptability, These ways are not completely applicable to all functional areas or uses for areas shown on a general plan but each are applicable to some area.

(a) The provision of extra space. By planning areas larger than their present need indicates, future needs in terms of expansion can be accommodated. For instance, land for schools that is too large for the present need could be set aside and used either as the present requirements become too small in terms of the population using them or the standards for activities were increased.

(b) Segmenting of functional use areas. Specific land use areas which are planned to be isolated, are capable of renewal with less effort to the total city than when functional areas are interlaced with each other. This also controls the spread of blight which carries with it obsolesence and the need for renewal. For instance, the shopping areas, which were centers in the early quarter of this century (depending on street cars primarily) and are interlaced with both the road system and the residential areas in their present state of obsolesence, are both spreading this to the surrounding residential areas -- and have been limiting factors in the renewal of the road system.

(c) Neutral building forms. The development of neutral and unspecialized building forms which can be used for different functions provide a method of achieving flexibility. For instance, the provision of a shopping unit or school with movable wall panels to be changed as the need in size changes could allow them more adaptability to conditions.

(d) Planned renewal. The provision for renewal of large functional areas of the city at the end of specified amortization periods would provide a check on the use of obsolescent buildings which lead to slum conditions in all functional areas of the city (schools, shops, residential areas etc). This would help the city keep up-to-date so that areas which were tax liabilities and hazards for other areas of the city would never result.

3. Identity

In a general plan, identity is the quality which differentiates any functional area of the city from any other one on the one hand, and makes all similar areas imagable through their similarity. It is also a quality which can bring the entire city into a unity, anddifferentiate it from any other city. An example, is the radial street system of Washington which focuses on major edifices sited on hills. The identifiable features of cities are often found to encompass an area far beyond the actual political boundaries of the city or even the built-up metropolital area tying the city to its hinterland. For instance, the London green belt and satellite city plan

extends far into the countryside; or the identifiable backbone of the transport system focusing on Detroit extends to the limits of the metropolitan area and beyond as an identifiable feature of the landscape.

Summary

Thus together these goals bring forth a meaningful and intelligent congruity both in time, space and quality giving the entire city and region a coherence. The citizen is then better able to understand and identify himself with the total environmental unit (rather than a series of small units meaningful only within themself) and also binds the total citizenry of the greater Boston area together with their common environment.

C. Diversity: Freedom for the individual and his community environment to develop according to special characteristics, needs, or desires.

This final goal is set forth with the realization of the diversity of interests and possible paths of development for each person and for each part of the city. It is necessary to temper all other objectives with recognition of the basic freedom of the individual, allowing him to have choice and also providing variety.

1. Variety

Variety is an intermixture or succession of different things or qualities. One of the most important aspects of the city, differentiating it from suburb or country, is its great variety of functions, people, buildings, and activities. Yet, within the great sprawl of the modern city there is also a

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character of sameness and monotony. Variety is interpreted to mean that the different functions are placed relatively close together throughout the city. Thus, each large segment of the city would contain a range of different land uses and activities, or a range in quality of uses and activities.

2. Choice

Choice is the possibility of having an alternative; it allows the voluntary selection between two or more similar things that which is preferred. Variety would demand, for example the allocation of areas for both high rise apartments and single family houses. Choice, however, would further demand several kinds of high rise apartments at various places, of various sizes, price, etc.

Summary

The two objectives of variety and choice often complement each other allowing the citizens to develop as an individual and not as a prototype according to a set environmental pattern.

DEFINITION OF OBJECTIVES IN TERMS OF SOCIAL AND ECONOMIC IMPLICATIONS

As yet there has been extremely little research on the relationship of the physical environment and the social and economic states. Many implications which are outlined are still not completely empirically tested and thus to a great extent matters of opinion. These implications are outlined as they do play extremely important roles in the future of the city as a place to live.

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Furthermore, it must be recognized that these goals have strong implications beyond the physical form of the city.

A. Development: The opportunity for individual development of all citizens of Boston and its region and the opportunity for the development of the environment to the fullest potential.

Development implies both social and economic growth potential for the citizens and the city. Directly this affects a higher level of living, fuller development of the economic base, and the growth of interest by the individual in public and personal activities. These are more specifically achieved through the attainment of health and safety, amenity, stimulus, convenience and efficiency.

1. Health and Safety

The provision of a healthy and safe environment forms the milieu for both social and economic development. The attainment of this goal is basic for the satisfaction of human needs and wants so that social and economic growth may take place.

2. Efficiency

Efficiency has strong economic implications by its very definition. It is most often thought of in terms of areas of economic activity - - especially areas of production, distribution, and exchange. The physical planning of this area for efficiency will promote the possibility for both economic growth and stability of the city. This in turn will create a situation of fuller employment and hence allow greater consumption which again furthers economic growth and stability. Thus, the creation of an efficient area of

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economic activity will also bring both growth and stability to the public sector.

The economic implications of efficiency inter-relate with social implications especially through the creation of opportunities for fuller employment which allows generally higher levels of living. In addition, the creation of areas which make consumption more efficient, allows the individual to attain more of his wants and needs by making each more easily attainable.

3. Convenience

The economic implications of convenience reinforce those of efficiency through the satisfaction of locational factors particularly at a smaller scale. Specifically, the relationship of areas of production, distribution, exchange, and consumption, would be established so as to be most convenient in their arrangement. In relating those activities together which are most interdependent, convenience further increases their economic potential. Thus, convenience promotes the opportunity for the development of the economic base of the city.

A convenient plan allows the individual to utilize the full advantages of the city, by their location to maximize use. Socially, this allows any individual greater possibility of participating in the activities which he desires.

4. Amenity

The environmental demands of amenity usually tend to strengthen the social organization. In a sense, amenity provides the milieu for

human contact and interchange. The pleasantness of an area tends to attract people, and in this attraction provides the first step towards the establishment of social contact.

In providing amenable living areas, the residential sectors gain both social and economic stability. Amenities provide reasons for community security and stimulate community pride. Thus, more than being pleasant the provision of amenities by land use plan become a significant factor in the attainment of a city in which there is faith and security as a living unit. Economically then this relates to the use and distribution of community facilities throughout the entire city.

5. Stimulus

The creation of stimulus through a land use plan directly is to effect the economic and social system of the city. The incitement to work to effect the community, city, and region environment is concommitant with the development of social and economic awareness. This then furthers growth and development socially and economically of the citizen and of these sectors of the makeup of the city and region.

B. Coherence: Coherent patterning of relationships between the individual's activities and the total environment in time and space.

Coherence relates to the workableness of the physical plan at any point in time, and thus also relates to the workableness of the social and economic system which are accommodated within the plan. Economically, coherence focuses on relationships, particularly those of supply and demand. For instance, it fits the employment capacity to the number and type of labor force (seen in the land use plan by industrial land and density in relation to residential land and density).

Socially, coherence emphasizes the social organization of the city. It integrates the family organization to the neighborhood to the community and the city. It also integrates the individual life to the various social demands made on it through the elements of social organization.

The attainment of these broad social and economic implications are furthered through the achievement of continuity, adaptability, and identity -- all of which complement coherence.

1. Continuity

Socially, continuity is directly related to the organization of individuals to the city and their communities. Continuity tends to strengthen stability and organization at the smallest residential grouping and at the largest. In the maintenance of a functional area over time, people have faith in it and thus becoming willing to be socially as well as physically integrated with the area. This then affects the lifetime of any particular area and stresses its long term assets. Furthermore, continuity affects the individual's interest and participation in government and in larger social organizations, as he gains faith in these as well as the environment.

In much the same way, continuity affects the economic life of the city and its region. Again, it would tend to bring out the economic assets of Boston and stabilize them which would then strengthen them in time. This strengthening of the economic base in time then has widespread effect on the economic elements of increasing potential for production, distribution, exchange, and consumption.

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2. Adaptability

Adaptability complements continuity in achieving coherence in time, although in many cases specific ways of gaining adaptability conflict directly with continuity. The combination of the two however, are needed in providing a confidence in the city as a creature of its historical past and as a vital area of activity in the future. Socially and economically, continuity with the status quo is tempered by the provision for the ability to change to keep up to the latest interpretation of social and economic needs and wants in terms of changing technology.

Economically this demands the continual modernization of the city's facilities and industrial areas to meet the contemporary standards of the time. This helps strengthen the faith in the community, especially to the worker, in terms of full employment at future dates, and to the industrialist in his need for a stable and growing region to serve. It also presumes industrial growth and change so that new techniques and needs are incorporated with the older pattern of work.

Socially, adaptability demands a population pattern which incorporates the needs of an evolving society. If the level of living will be raised through the achievement of this set of goals, then the new needs and wants concomitant with this level must also be provided in order to accomodate social growth. The provision of adaptability allows the change in behavior patterns and social organization which might come with the fewest possible conflicts to the status quo.

3. Identity

Continuity and adaptability have mainly sought to achieve coherence through time. Identity more specifically demands coherence in the physical environment -- or imagibility. Socially and economically it would then tend to structure these systems and unify them with the physical plan.

Identity provided in the environment can provide a symbol or a catalyst for the social organization of the area. For instance, the grouping of a community center with junior high, libraries, recreation areas to suit the community tends to draw all elements of the community together at an identifiable place, and differentiate them from another community. This place then has social meaning to them and it is enhanced as a place in which to live.

Economically, the identity of the economic pattern of the city and the region gives it a viability and differential advantage from other cities. The very identity, for instance of Detroit as an automobile center focuses the industrial activity there. In this way the identity of Boston as a center for electronic research and development, has increased its economic viability. This identity is furthered by sound locational reasons for such development but is definitely enhanced by this imagibility.

C. Diversity: Freedom for the individual and his community environment to develop according to special characteristics, needs, or desires.

In addition to development and coherence, the physical objective of diversity suggests that there are many different ways in which to

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achieve development and coherence. It allows freedom for each area or individual then to achieve these by methods most particularly suited to it. Socially and economically, this then also acts [illegible] creating a uniform for the whole city and its region.

1. Variety

Variety focuses on a diversification in the economic base of the city. Diversification, instead of specialization, is an asset in providing economic stability particularly through its effects on counter-cyclical economic strength. It provides a leveling factor in time of economic boom and also in time of depression so that the city and its region will probably neither reach the peak or the nadir of the economic cycle. This diversification then assures relatively stable employment regardless of the economic cycle for a wide variety of kinds of workers. As well as introducing stabilization in terms of the economic cycle, it also stabilizes the economy in terms of technical advances or new competition which render industries obsolete. With a diversified economy there is relatively high probability that all sectors will not become obsolete at the same time, and the obsolescence of one area will not create a situation of extreme depression.

Socially, variety leads to a heterogeneous population by drawing various kinds of workers and their families. This then leads to varied social groupings so that the individual is able to find many possible social identifications. This wide variety of people will then also probably be able to support a variety of social and cultural institutions adding stimulus to the environment for social interchange.

2. Choice

Within a diversified economy, choice allows for alternatives. In a way this provides for a competitive stimulus within a sector of the economy. It places the individual specialized worker in a position where he can shop for his employment, it gives the producers and consumer competition, and in total stimulates the development of any particular sector.

Socially, choice does not demand a conformity for any one group of the diversified population: it allows the individual the ability to choose between alternative social identifications.

RELATIONSHIP OF OBJECTIVES TO FUNCTIONAL LAND USE CATEGORIES

Each goal pertains to the relationship of the individual to each specified function land use and the relationship of the land uses to each other. In this discussion, the land uses have been broken down into four major categories with subcategories as follows:

A. RESIDENTIAL OR LIVING AREAS

B. PUBLIC AND SEMI-PUBLIC AREAS

  1. Open space-Recreational

  2. Institutional Areas

C. WORK AREAS

  1. Central Business District

  2. Shopping Centers

  3. Production Areas (Industrial and Manufacturing)

  4. Terminal Areas (Wholesaling, Warehousing and Transportation terminals)

D. MOVEMENT

In certain cases these land use categories are overlapping; for instance, there are some work areas and public and semi-public areas within the residential area, but these are at a small scale and are not capable of being sorted out at the city scale. Thus, the determinate of sorting out the land uses from one another is their scale, which in this case, is from the point of view of those things valid to be discussed as that of the city as a whole and its region.

The set of goals is not always completely achievable for each land use as some of them conflict with others. These conflicting goals

will be analyzed so that when value judgements are made on priorities of achievement of particular goals, the resultant will be known.

Some implications for the goal and the set will also be drawn for each of the categories.

A. Residential or Living Areas

1. Development

The individual is most closely tied to this living area and it is here that he can have the greatest possibility for personal development. This can be achieved through residential area plans, which relate the individual to the city. From the smallest unit within the residential area to the sector composed of some 10,000 people; to the community area of about 100,000 people; to the entire city and region, the individual should find scope for growth in every dimension (Diagram 1.). The achievement of development in living areas comes through the provision of an environment which is healthy and safe; has the amenities of pleasantness and facilities; is convenient to the facilities within the area and the city; is stimulating; and is efficient.

The basic environment for living must be healthy and safe. Dwellings should be free from pests, excessive danger of fire or flooding, overcrowding and unsanitary conditions. The living area should be free from smog, noxious gases, objectionable noise, swamps, dumps, and other unhealthy characteristics. The road system should be free of conflict, noise, and hazard to the pedestrian. The achievement of health and safety in this last manner would usually directly conflict with convenience to the facilities outside of the residential area. This is because priority would necessarily be given to rapid transportation, at

the front door of the most possible dwelling units and this is usually a creator of noise and hazards for the pedestrian.

On the other hand, the achievement of health and [illegible] in all ways listed, complement amenities of pleasantness and facilities, and convenience to facilities within the residential area.

Development is further made possible by providing those things that are amenities within the residential sector to enhance the possibility for the individual's growth. These include all institutions or special events which families utilize at least once a month, i.e., schools, playgrounds, neighborhood shopping areas, churches, libraries, meeting places, etc. The value of these facilities as amenities is often destroyed by the planning of a residential area to be convenient to facilities of the city. A park or library which is separated from the individual's house by a major thoroughfare is not really an amenity to it because it is cut off.

Convenience to these facilities within the residential area is complementary to their placement as amenities. It is possible to have one without the other: a school may be in the next block to a particular house but the route to it may be several blocks long as it may be cut off by some other facility, natural barrier or the street system itself. So, these two objectives work hand-in-hand in the achievement of development (Diagrams 2, 3, 4.)

The amenity of pleasantness within the residential area is also important. This can be attained by the separation of the functions from the residential areas which destroy the pleasantness and by the relation of the facilities to the housing and the houses to each other. This, again, would probably conflict with convenience to other areas

and with efficiency. Planning for pleasantness in the living area, often is antithetical to efficiency. For example, the gridiron road pattern, which is often most efficient, is monotonous and not the most pleasant. Or a pleasant arrangement of houses and densities may probably not be efficient in terms of the capacity of the land for development.

The conflict of convenience to areas external to the residential area has been noted in regard to health and safety and the amenities of pleasantness and the provision of facilities. On the positive side, the provision of external convenience does allow the individual easier access to areas of work, recreation, institutions, and major shopping. To the extent that this is important in relationship to the achievement of the other goals may probably qualify the extent to which it is sought to be achieved.

To satisfy the objective of efficiency residential areas should be compact. The size of the residential community should relate to the optimum for the provision of necessary facilities and public utilities. In the same terms, the areas not needing these facilities and utilities, i.e., recreational open spaces could act as separators, concentrating the residential communities. It is clear that in gaining this compactness, sometimes the amenity of pleasantness may be lost. More important, and more difficult to comprehend is the probable conflicting affect of efficiency to stimulus.

Stimulus demands the residential area be one in which the individual can use his own initiative in the development. The perfectly planned neighborhood or house, for that matter, from a purely efficient viewpoint tends to be unstimulating. Stimulus may be furthered by providing convenient facilities, but in the physical design it becomes a very difficult thing to build into a residential area.

2. Coherence

Coherence in residential areas is obtained through giving it adaptability by its self containment in one sector, through a mix of housing types; and through planned renewal; continuity in time and space; and identity with the metropolitan area, as a community, and within the sector.

In terms of stability, continuity with the past and faith in the future of a residential sector makes it worthwhile for living. In part, this continuity can be provided through the amenities, factors affecting health and safety, and those facilities enhancing development within each sector. But continuity is more, it pertains to informal social and economic patterns as well as the more formalized ones.

Historically, residential areas or communities have grown up around the shopping area and were tied together by the roads which first served for horses, carts, and pedestrians, and then for the street railway. Today, these same roads with heavy traffic tend to break the shopping area from the residential scale. The use of this road by the automobile and heavy traffic splits the community itself into pieces which still try to function around the traditional focal point. Thus, the car and motor traffic has caused a discontinuity with the historical development of the residential areas.

In addition, there are many areas which have historically developed as single type and single social group areas. These are both in the category of single free-standing house areas and more

densely settled areas, for example, with three deckers and walkups. Both of these can often be identified with particular population groups.

These two historical developments of residential areas have not given them, in many cases, stability. The shopping center in the middle needing access to major transport lines has cut up the residential community and often introduced a deteriorating factor; an area of a single housing type also tends to deteriorate at the same time -- with resultant wide-spread blight. Thus, it seems logical that these are two historical continuities which would conflict with the goal of continuity itself, making it necessary to achieve this objective by other means.

It is important to gain a thorough knowledge of each community, in seeking to endow it with continuity. In this light the aspects of the character of each community which provide long-run assets must be spread out from those which are rationalizations of particular socio-economic phenomena or current fads, significant in a shorter period of time. If continuity is provided in this manner it will not conflict with the achievement of adaptability for the residential community so that it is always up to date and well-functioning.

The achievement of continuity in space, as contrasted to continuity in time, offers a more concrete and easily achieved goal. Continuity is conceived of at three scales, the metropolitan, community, and sector. At the metropolitan scale, it is rather meaningless for residential areas and would tend to result in an endless sprawl of housing -- and would conflict with the goal of variety, as well as the achievement of adaptability by having the residential sectors separate.

Continuity within the community scale (about 100,000 people as stated before) would suggest that the environment be consonant with every day living. It would demand the exclusion from view as well as the boundaries of the area, those things which are incongruous with residences. For example, a high school or a community center with some shopping would add to the assets of it while a major auto-oriented shopping center or a professional baseball park would break up its spacial continuity (Diagram 5).

At the smaller scale of the particular residential sector (an area with 5-10,000 people) continuity becomes more specific, and might suggest that at this scale the housing type itself become an element of it. For instance, continuity of the single family house, or a duplex and garden apartment area, or even a garden apartment and high-rise area, while having some mix of type, would not become monotonous over space and probably also better suit continuity in time.

Closely related to continuity is the achievement of identity of residential areas at the metropolitan, community, and sector scales. Identity at the metropolitan scale is important in relating the sector, and community to the city and region so that it is meaningful to the citizens. Identity would seek to relate the living areas to the entire metropolitan area so that they form one comprehensive entity and not just a cluster of small towns.

Identity within the community leads to a logical understanding by the citizens of their culture. It can also give meaning to the community as distinct from all others bringing a sense of unity within it. The provision and siting of the community facilities and a community center can help to promote this identity, but the provision of a

nicely laid out community center is no guarantee of this.

Sector level identity is much more refined, and again would relate to the housing types, the provision of neighborhood scale facilities, and the actual site planning and housing placement within the area. This aspect is important in promoting the more informal identifications of people to an area and hence to other people.

In many cases, the lack of acknowledgement of the goal of adaptability to future change has put the residential areas of the city in their present dilemma. This has resulted in the necessity of taking drastic measures of totally tearing down and rebuilding large residential areas of the city -- in a job, that at present, seems to be growing in scope as the inroads made are very small. It is the aim of adaptability to avoid this situation in the future.

There are several practical means of achieving adaptability in residential areas. One is to develop the residential areas in sectors cut off from the rest of the city by major barriers. Today, with unseparated residential sectors, often joined together by blighted and worn-out central shopping areas tied to the old street railway, obsolescence and blight spreads from one segment to another along these lines of communication. In separating the areas in the future the spread of blight is not only deterred but each area is capable of renewal or a change of land use without directly affecting other areas of the city. A second way is to provide a variety of different dwelling unit types in one area so that all types might not become obsolete at the same time. This might increase the possibility of rehabilitation instead of the grand outlay needed for redevelopment. A third proposal, which can work well with the second, is to plan for

obsolescence, as mortgages are planned to be paid up. This would result in a program of periodic capital reinvestment in each residential area to avoid blight taking place.

Together, these three techniques might achieve a city of the future which would inspire more confidence in its people to carry on a program of keeping residential areas up to current standards and desires. In addition, for the most part, continuity, identity, and adaptability, can fit together to bring coherence to a plan. While it is true that continuity in time when viewed from certain viewpoints does conflict with adaptability, this can probably be worked out. On the other hand, a choice must be made between continuity on a metropolitan scale and adaptability through the segmenting of areas into sectors and through residential mix.

3. Diversity

Diversity as seen through variety and choice is necessarily discussed at different scales, from the sector to the metropolitan. Variety in residential areas on a metropolitan scale refers to their overall pattern. It is not suggested in this goal that variety at one scale should destroy variety at other scales. Thus, at the metropolitan scale it is necessary that the residential areas, although they may have variety within themselves, are not rubber stamps of each other and thus homogeneous on a metropolitan scale. On a metropolitan scale, variety may be achieved if each residential unit is more limited in its variety so that the broadest variety is seen only at the largest scale. (Diagram 6)

Variety on the community level may be denoted in the land use pattern as a range of densities and housing types. (See Table 1, Table of Densities) Practically, this becomes a limited range of densities and residential types within each area. For instance, one residential area may vary in density from an average of 9 dwelling units per acre to 40. This would provide a variety of housing types including single family houses, duplexes, row houses, garden apartments, and walk-ups, and a range of sizes and types within them. Socially this might introduce a variety of population within each community and different racial, ethnic, age and income groups. Economically, variety would also offer a range of housing costs, and probably a range of kinds of occupancy groups, i.e., rental (public and private landlords), ownership, and co-operative.

At the sector scale, variety necessarily becomes more limited. Again, so that each sector does not become a rubber stamp of each other one and variety is lost at the community scale.

The fulfillment of the goal of variety allows each family a choice of occupancy in dwelling unit and residential area regardless of particular racial, income, age and family size characteristics. Today, this choice is non-existant in many residential areas.

Furthermore, variety and choice limit the size of residential areas into communities related to different land uses of the city. This allows the community's citizens to enjoy a choice of activities unrelated to the residential land in near proximity.

4. Development, Coherence and Diversity

Each of the goals has been discussed separately in terms of how they might be achieved and the contradictions within their achievement. The relationship of the three

together provide yet another set of situations in conflict with each other and complementary to each other.

The means of achieving development are compatible to the other goals, except in one case; there is a conflict between amenity of pleasantness and variety and choice at the sector scale. It is probably most likely, that except in rare cases, pleasantness of environment is enhanced by a certain amount of similarity. This visual similarity probably reflects at this scale, the underlying social and economic similarity which in the immediate environs usually add to what the individual considers pleasant. This conflict does not occur at any greater scale however, and in discussing variety and choice, it was suggested that on the sector scale, it was necessarily limited so this conflict would probably not arise in actuality.

Coherence is compatible with all other goals, except in some specilized cases of continuity. Continuity in time is often in direct conflict with variety and choice at both the community and sector scale. However, as discussed in this light, continuity in time, is not important if it does not add to the stability and faith in the future. Again, continuity in space, at the metropolitan level, would probably conflict with variety and choice at the metropolitan level, as would continuity in space at the community level and at the sector level, conflict in terms of each scale of variety and choice. However, as variety and choice were defined to become more limited with smaller scale,

this conflict is made more compatible -- and as continuity in scale was defined to be more limited as the scale was larger -- the two goals are further made compatible.

Thus, it can be seen, that the set of goals together, can form a meaningful and workable framework for establishing plans for residential areas.

B. PUBLIC AND SEMI-PUBLIC AREAS

1. Open Space and Recreational

a. Development

Open spaces and recreational lands are often referred to as "the lungs of the city." This function is closely related to health, safety, and the development of the citizens. It is true that as "the lungs of the city," open spaces are basic to the health and safety of the citizens. However, it is necessary to take precautions so that they are actually so. It is as important to study the elements of open space as it is residential areas in terms of their actually being safe (not crossed by major transport lines, for instance) and healthy (not disease breeding swamps, for example). It is not enough to set aside an area of open land and assume that it is both healthy and safe.

Amenities are necessary in open and recreational spaces both in terms of pleasantness and facilities. Pleasantness might be broken down into two parts, visual and in terms of other environmental conditions. Open space and recreational land is usually considered as a visual amenity to other kinds of areas. For instance, a park is an amenity in a residential area or some landscaped area is an amenity to a shopping center. However, it is also necessary to consider this from the other point of view. In the use of open space, for instance, as a buffer between residential and industrial land use, and then to

use this space for active recreational grounds or community parks, should not be done unless the visual pleasantness of this area as a park or play space, is also considered. Visual amenity should be considered in terms of the actual use of the space -- as purely a buffer for a quiet park, a natural reserve, children's recreation, adult recreation, etc. Certain of these then conflict with the provision of facilities in open areas, e.g., a natural reserve with the visual amenities would conflict with a ball park, or a large swimming pool, and its associated buildings. They also conflict with convenience to the facilities of the open space and convenience to other land uses. A reserve for instance, wants to be isolated, while certain parks may be better placed close to other areas within the open space or near other functional areas, e.g., residential, shopping, or even industrial.

The other environmental conditions, than those that are visual, conflict with the other goals of development in much the same way. However, these conditions have other qualifications in regard to the pleasantness of the open areas. In some kinds of open space, the amenity of quietness is highly important: in other kinds, noise can actually be an amenity. Thus, it is necessary to arrange the use areas within the open space so that quiet and noisy areas may be incorporated in plan.

While certain goals of development, particularly the amenity of facilities, internal and external convenience, conflict in some ways with having pleasant recreational and

open spaces, these conflicting elements are able to be handled by design when they are defined.

The provision of facilities within the open space and recreational areas provide important amenities. The setting aside of a piece of land that is pleasant does not assure that it will be used as it was intended. This can be sought to be achieved by then providing the adequate facilities for its intended use.

This aspect of amenity is closely associated with and usually complemented by their placement so that they are convenient to each other and to certain external areas. In their internal arrangement they should be arranged so that they are related to the particular population which they serve. For example, a swimming pool and ball park may be placed adjacent to each other to both serve the teenagers, or a child's play area may be placed close to walks suitable for pushcarts or a park for the mothers or supervisors to sit. In analyzing open space and recreational areas from this viewpoint, it usually does not conflict with the amenity of peacefulness, although this is a further necessary criteria.

Convenience to other functional areas of the city also relates directly to the use of the open spaces. Recreational land, which is used by the whole metropolitan area, at some point must be accessible for all those who are to benefit from it. For instance, major ball parks, beaches, etc., should be accessible from major traffic routes. This does not hold true in the case of a natural

reserve or forest for metropolitan use -- for this to be pleasant, it must be relatively inaccessible to large numbers of people easily but having some access for use (Diagram 7).

Another distinction should be made according to the potential conflicts between health and safety and convenience to other land uses. Industries and major through roads can be conflicting to recreational open lands -- if the two are not planned in relation to their particular design and function within their broad categories.

Convenience relates, to a degree, to the efficient performance of open and recreational areas. Again, due to this double need for some areas to be extremely convenient and others inconvenient, their efficiency for use is furthered in planning according to this. Thus, to be efficient, the scheme of open spaces should relate to the various needs and their various scales. For instance, there are necessary relationships which give open space efficiency in their relation to the population that they serve. For instance, the play-field to which the child arrives by foot or bicycle, should be related to the service area for a group of children and the size necessary to serve them. On the other hand, a metropolitan use should be located for metropolitan access, both by road and perhaps by mass transit, and built at the size to accommodate such a number of people.

In one sense, areas of open space, which do not serve a distinct recreational need may be used to keep

other functional areas operating at efficient levels. For instance, the setting aside of unbuilt land, particularly at the metropolitan scale, can keep residential areas from sprawling and thus elongating communication lines. This also can bring about an efficiency over time, by then having an area for future expansion, which can be planned with adequate community facilities from its beginning.

A necessary factor in regard to the goals of achieving development, is the effect of open and recreational lands as a stimulus to the citizens. Next to the residential areas, the open-recreational lands are probably the areas to which the individual's every day existance is most closely associated...they are in this respect, areas of community living. While stimulus is not extremely concrete, there is one example of a recreational area with stimulus -- in relation to one without -- this is the creative playground instead of the traditional one. The traditional playground that is thought of has swings and slides and teeter-toters, etc. A creative playground would have the basic equipment from which the child can create his own environmental play units instead of using play furniture which is provided. The stimulus that the open and recreational areas provide then inter-relate the non-physical development of t he individual and the physical.

b. Coherence

Recreational and open areas need their own specialized kind of adaptability, continuity, and identity.

The adaptability of open spaces can be thought of in three different ways (1) capable of change of function, (2) over-sized, and (3) adaptable to be used for other land uses. Unfortunately, all open areas are too often considered in terms of the third kind of adaptability. This, however, conflicts directly with both continuity and identity and gives it no coherence whatsoever. While some areas may be justifiably disignated for this function - of future use for expanding functions of the metropolis not related to recreation, the greater share of the open space must be considered sacred - in terms of changes of use.

Both adaptability in terms of function and by being over-sized conflict with continuity in time but this may be tempered by design. Achieving adaptability through allowing a change of function within open areas is possible for areas which are not built up with specific structures for recreation.

Perhaps the most significant way in achieving adaptability to future needs for open and recreational land is planning them to be oversized for present needs. Such setting aside of open lands in the past, is now hailed as great foresight of the early planners. For instance, the fens, and the common, although extremely large when first planned, are at satisfactory scales for present day needs. Too often, this is not used as an example to follow. In fact, today, there often seems to be the feeling that the time is ripe to use up the space which has been set aside

in the past, for the present expansion of more extensive functions of use of the land of the city, e.g., residences, institutions, industry, etc., without the reservation of other lands in compensation. In providing over-adequate open spaces for today's standards and population, coherence in the future is more likely to be insured.

Continuity of open and recreational lands is thought of in time and at various scales. The achievement of continuity in time of the major land patterns of the city and of intensities, provide significant reasons for the maintenance of open spaces. In many cases, open spaces provide the factor which allows land to develop at extremely high intensity. An example is the Charles River, which seems to be a relatively permanent open space. This open space has enhanced high intensity developments immediately adjacent on both sides of the River, with the intensity dropping immediately when the view of the river or from the river is not possible (a prestige and good advertising position as well as an amenable one). The filling and building-in of such an open space would destroy the present coherence of location of the high intensity facilities on either side.

In addition, open space is extremely precious in the city, where there is intense competition for land and when it is removed there is usually little assurance or liklihood that it will be replaced by additional lands.

Continuity in the spatial dimension has different significance at different scales and for different kinds

of recreational open spaces. A major form of recreation has traditionally involved movement, eg., boating, horseback riding, walking, and now driving. The movement kind of recreation then demands land that is planned, so that this activity can take place in an area related to the speed and the length of time usually occupied in this activity. For instance, for walking, an area in which there is from one to several miles of paths, is probably sufficient but for a pleasure drive of one hour, with an average speed of 35 miles per hour, a 35-mile drive is needed. Thus, there would seem to be call for an elongated recreational area, including a drive at the metropolitan scale.

The call for such an extensive allocation of land then gives the opportunity to provide major strips or belts through the other uses of the city, which can with a transportation plan bring the whole together into overall coherence. A recreational drive, in its nature should be in a place which is pleasant to drive through. Thus, the relation of other recreational open spaces to such a slow moving drive would both provide access for them and amenity to the drive.

Continuity of recreational open spaces at scales smaller than the metropolitan would be related to the kinds of recreational movement and their use. At the community scale, the recreational lands would serve the needs of the people and may or may not be related to an inter-community system of recreational drives and areas. They may be related to each other and agglomerated in so far as their uses are

related or that they provide distinct amenities to each other.

At the sector scale, the recreational open spaces are part of the residential land. Open spaces at scales large enough to disrupt the living space are more apt to provide breaks between sectors than to provide a focus for relationships. These may provide community focus while separating sectors (Diagram 8).

Identity of recreational open spaces comes with their ability to bring nature into the city. When their naturalness is destroyed to the point of building form by man, then they essentially lose their indentity. For instance, a black-topped playground has no different identity than a black-topped parking lot -- its identity as recreational open space is nil. This kind of identity is necessary in the city where most of the functional areas are not related to nature, and where man still craves some association with the land. Thus, identity often gives the citizen a certain amount of coherence in terms of his relation and meaning within the city.

The provision and relation of recreational open areas to other functional areas of the city, to the whole region, and to the citizens provides coherence at several different levels. It was shown how this can give man coherence by the provision of identifiable natural areas, where he can perhaps seek deeper association with life than in the self-made facade of the city. Through the provision of continuity, there is another focal point for the functional areas

of the city becoming bound into one unit -- through the coherence of a set of recreational open spaces which provide for recreational movement. With both adaptability and continuity in time, the coherence of an identifiable city is achievable from the past into the future.

c. Diversity

The diversity of recreational open spaces assures their development for the cultural, intellectual, social, physical, and artistic desires of the citizens. There should be both a variety and a choice of all such facilities at the metropolitan scale. There should be a full complement of these different functions in locations which serve all citizens equally well.

In the close relation of the recreational open spaces to the residential communities of the city, these areas can bring diversity to the great amount of land used for housing, while still being amenable with it. In fact, because recreational open space is usually an amenity to every other kind of functional area, it is the one that can be used to inter-relate areas, separate areas, and through its placement throughout all parts of the city can bring an aura of diversity to the city landscape from the entire metropolitan area to the development of each sector.

D. Conclusion

Because recreational open space, is in a sense, a city luxury, this diversity is tempered by the limited

amount which may be allocated in a metropolitan region. Thus, it is of great importance, that this allocation be made with the total concept of development, coherence, and diversity.

Development in some ways conflicts with each of the possible ways of providing coherence through adaptability. However, adaptability through change in use and change in function conflicts with coherence as achieved through continuity in time and space. With added conflicting elements of amenity, convenience, and efficiency, unless adaptability through change in use of function can be designed to provide for both, it becomes apparent that to the greatest extent adaptability must be achieved in the recreational open spaces being planned to be over-sized. Adaptability, by being over-sized, may possibly conflict with both the efficiency of the open space itself (although complement efficiency of other functional areas) and the convenience of the open space. In this case, convenience and efficiency in the present must be weighed against the potential convenience and efficiendy of the future in its plan for adaptability, when a decision is made.

Other than in regard to these problems discussed, for the most part, the goals seem to be able to work together relatively well.

2. Institutions and Large Scale Facilities

a. Development

Cities and metropolitan areas serve as the location

for most major institutions and large scale facilities needed in any region. These facilities usually have their meaning as servicing the development needs of both the people and the metropolis. As such, they encompass specialized secondary schools, colleges, universities, and technical and cultural training institutions; medical and medical research facilities; institutions to care for special groups of society; water, sewage and major utility facilities; museums, galleries, concert halls, and special purpose culture buildings; cemeteries; and other large specialized facilities. These various kinds of functions in this over-all category have various needs, yet are considered together as they have the common factor of serving all of the citizens of the metropolitan region.

In serving the development of the citizens and the region, health and safety become important in this use; both by the fact that many of these institutions are concerned directly with the health and safety of the citizens and in that as they are used by a large number, they must be located for health and safety.

Amenity of these areas may be thought of both in terms of pleasantness and the facilities which service them. In terms of pleasantness, amenable areas related to the different facilities differ greatly. Those facilities which serve the largest number of people or are most closely associated with the culture of the city, find the regional center an amenity. These same facilities might also find recreational open

spaces an amenity and may create amenable surroundings for certain kinds of open spaces. In this category are specialized secondary schools, some colleges, some universities, and some technical and cultural training institutions; medical and medical research facilities; and museums, galleries, concert halls, and special purpose cultural buildings. Other of these facilities which are more specialized, serve less people, and are perhaps more related to the development of the land than the people are best located away from the regional center and perhaps associated with the more less-used kind of recreational open lands. Such facilities include institutions to care for specialized groups of the population; water, sewerage, and major utility facilities; and cemeteries.

Common amenities to both of these categories is some kind of recreational open space. Thus, when the two are planned they can readily be considered together in the allocation of a metropolitan land pattern for development.

Pleasantness for certain of these facilities conflicts directly with the provision of facilities, convenience, and efficiency, while in other cases, these are complementary. In the suggestion that these facilities are considered with recreational lands which have similar requirements of pleasantness...this goal is accommodated.

The provision of facilities themselves, provide amenities for some of the large institutions. The degree to which facilities are amenities to them are related to the use of

the institutions. This relationship is again closely allied to that of recreational open spaces and can be considered as the special institutions are considered, according to the amenity of pleasantness.

The convenience of these institutional lands to other areas of the city affects their development potential. It is imperative that medical facilities, museums, galleries, concert halls, and special purpose cultural buildings are highly accessible. They should be at the most convenient locations for the largest number of people. Specialized secondary schools, colleges, universities, and technical and cultural training institutions; and medical research facilities, should be relatively convenient in access to the other parts of the city, but are probably better off if not surrounded by most intense uses or located right on major traffic routes. These kinds of functions are better both related to other parts of the city and still having some space and even related to areas of lesser activity. For instance, colleges often desire large campuses in more out of the way spots so that they can create an entire, rather specialized environment. A third category of these institutions includes some schools and colleges, institutions to care for special groups, and sewerage and major utility facilities which need not be convenient at all. In fact, too much convenience can act to off-set all their amenities and their positive qualities, which they need for development. For instance, many kinds of institutions for the care of the sick, work the best if

they can be set in a more countrified atmosphere -- they are not necessary in prime locations or where they are ready accessible to a great number of people. (Diagram 9)

The efficiency of the institutions and large scale facilities is related a great deal to whether they have achieved their peculiar necessary requirements in terms of health and safety, amenity and convenience. In addition to this, by the very scale of these facilities which are being considered, their size can give them efficiency and practicability. For instance, most of them locate in the center of the region (although not perhaps, the regional center itself) because they must depend on a large number of people to operate at a size which is practical. However, with this size they usually need a great deal of land -- this is a commodity which is more dear at the center of a region than most any other place within the region. With the evolving transportation technique and growth of potential mobility without being tied to the traditional centers, unless these institutions have sufficient land at a cost at which they can pay, they will no longer be as tied to the center of the region as they have been in the past. The implications for the provision of land for these functions in the metropolitan area mean that they must be sufficient for their operation and in a position where they are not extremely costly (including room for potential expansion). Again, they can become efficient through the amount of land and add to the development of the city when certain of them are considered with certain

kinds of open space. Certain kinds of open space is usually indicative of "valleys" of development and "valleys" of the economic cost and potential return from the land.

Development by stimulus is one of the major reasons for the existance of many of these facilities: the stimulus of the individual to further his own development is the primary factor behind educational institutions, research facilities, museums, galleries, concert halls, and special cultural buildings. Their location in the environment most stimulating to the particular kind of education, research or cultural activity becomes of prime importance for each one. In this way, they must be planned for separately and are most difficult lumped into one broad category. On the other hand, for the stimulus of the people of the region and the city as the center of the region, these facilities must be provided for to assure the maximum possible development. In this latter light, the requirements of efficiency for the institutions must be met by the city and metropolis to best suit the needs of the development of the citizens in every respect.

b. Coherence

Adaptability for these large scale facilities may either be provided in the neutrality of their structures or through provision of extra land or space so that they are over-sized at the present.

As these large scale facilities and institutions are extremely specialized and are unique to the large metropolitan areas which can support their specialization, neutrality of structure is often impossible, if not destructive to their reason for being. Their coherence is often found in their very specialized structures. The atmosphere created by such buildings which can only possibly be afforded to service a large region is lost when their structures become neutral. Neutrality of structure is possible however, and a working means of achieving adaptability when the facility is less tied to the cultural makeup of the region, e.g. medical and large scale utility facilities are in this category.

The provision of this group with oversized structures of land for expansion is quite important in their achieving coherence in time. As the region grows, these facilities often grow in size, for each one, as well as in number. The provision of expansion space is especially important for such things as educational institutions, research facilities, museums, medical areas, large scale utility facilities, and special-care institutions.

Opera and concert halls have relatively uniform size throughout history. While they have demanded expansion through the provision of parking lots during the last 25 years, their actual sizes have remained relatively constant. Adaptability in time for them, can probably neither be achieved through neutrality of structure or by being oversized. Fortunately, these kinds of large scale

cultural facilities are elements which need less adaptability and are one of the major things which provide continuity with the cultural past for the community.

Continuity in time of the city's institutions is one of the most important goals for them. This is because their location at the center of the region is directly related to the importance of the region's center in the future. If there is a desire to keep Boston as the important center for New England, these facilities must be here -- the loss of them would create a significant factor in the possibility of loss of importance of the city as a regional center of importance.

Continuity in time has been discussed in terms of potential means of adaptability and it has been brought out that most of these institutions and facilities have strong ties with the past. These must be strengthened to have additional meaning into the future. This can be partially achieved through their relationship with other land uses and as areas themselves.

In this way, continuity of time, is closely associated with continuity in space. In the section on amenity and convenience, the relationship of these facilities to other functional areas was discussed. These considerations must then be related to the site organization of the institutional land itself so that it focuses on its special kind of spatial continuity. For these events, this might be as a completely distinctive element in contrast and then having a coherence within itself or it may be closely associated with the surrounding areas. Continuity in space should not be thought

of in terms of relating all of these facilities to each other. In fact, the facilities are usually more coherent when they stand alone in another functional area. For instance, the location of all colleges in one great belt would not serve to make them meaningful in contrast to their coherence of location in relation to an existing community or other cultural facilities, or the regional center. It has been suggested in that these facilities are usually all complemented by having relationship to some kind of open space, the recreational open space might well be used to give them their common element of continuity. The location of institutions on or near parkways and other open spaces would be amenities to both as well as creating focus to these land functions.

The identity of the facilities is another significant way of their achievement of coherence. This would conflict directly with their neutrality of structure and in some cases might be apropos, e.g. the identifiability of a sewage plant is probably not necessarily desirable. Most times the identity of these institutions provides an important element in the identity of the city with its region. For example, the identity of North Church and Harvard Yard become images which give Boston a particular coherence different from other cities.

c. Diversity

Since this category as it has been defined does include a wide range of different things, it is diversified. However, variety and choice emphasize the need for a wider range perhaps within each of these categories. As these facilities are

extremely significant in the development of the individual and the land of the region and its center, the choice and diversity provided for the kind of development will lead to a better balanced region. In this light then, the growth and development of the old and of the new institutions and facilities should be promoted to further the viability of the region and its center.

d. Summary

Between the major objectives of development, coherence, and diversity, there are few conflicts. This is probably due to the fact that this category contains such a large number of special exceptions. Adaptability conflicts with development factors which in most cases are more important than this particular means of assuring coherence. Other than that the conflicts are of minor character and must be worked out in specific small scale design. In fact, in the case of institutional and large scale facility planning, the achievement of this set of goals is extremely dependent on specific small-scale design and relatively less related to total overall patterns.

G. AREAS OF WORK

1. The Central Business District

The Central Business District of the regional center is a unique place within the entire region, because it is the point of land where there is the greatest economic activity and the greatest competition and hence value of the land. It is unique and calls for special planning because of these

factors as an activity area. Although its primary function is that of business, in many ways this area is a microcosm of the whole region's activities but the outstanding activity is that of exchange and service.

a. Development

The regional center should provide the most striking example of the fulfillment of the objective of development. It is within this area that the most advanced and sophisticated development of the city and its culture should be available for the citizen. Its chief aspect should not be one of civic monumentality but a series of events bringing together the highest attainment of development in all fields for the metropolitan and regional area.

As the economic activities of the central business district are one of its basic functions, efficiency is a highly significant goal. First, it is important that the center is a center in terms of time-distance patterns in its external relationship to the city and regional area. Second, it must be efficient in moving goods and people around within itself. Third, it must be well designed to locate activities with the greatest inter-relationships nearest each other.

Efficiency in the central business district is closely related to convenience. Convenience and efficiency may be achieved by the provision of a compact center to allow close inter-relations of all the parts. It should also be convenient in relation to all forms of transport terminals withih it and its activities as well as for the pedestrian. In this

relationship of movement and terminals, the central business district should also be planned for health and safety. Vehicular movement, goods and terminals, should be removed from pedestrian precincts to control noise and unpleasant smells, as well as allow freedom and safety of movement.

The amenities for the central business district are unique. On one hand, they are those things which make it pleasant, and on the other, those which give it anonymity. At some times these may complement each other and at other times conflict with each other. In part of the area crowds, noise and confusion may be amenities while in other parts quietness, sedateness and orderliness. Both kinds of precincts are necessary to best allow the development of kinds of activities located within this compact unit.

Health and safety, amenity, convenience, and efficiency should be accommodated to stimulate both the development of the land and the use of the center by the people. Stimulus is also related to the plan of the center and the activities adjacent to it which have a greater potential for interaction with the center than more outlying areas. Thus, it is stimulating for the center to be near regionally important institutions and facilities, regionally important recreational areas, intense residential developments for those people closely associated with the activities of the center, and large scale terminals for people and goods. These things tend to stimulate the central area to develop to its fullest potential as the center of the region.

b. Coherence

Continuity with historical traditions, especially for Boston, becomes a special asset to the regional center emphasizing the importance of the preservation of the focal points of history in relation to new developments. Continuity in terms of the confidence in the center to maximize its development is necessary to assure stability for the large investments needed. This seems to conflict with the achievement of adaptability, and in practical terms, continuity plays a more important role in the design than does flexibility to future change.

Continuity in space may be achieved by the gradual transition of intensity of land development as the center is approached. This varies from the discontinuity of a plan to consciously separate the center as an absolutely distinct zone. For example, in the plan of Adelaide, Australia, the central business district is completely surrounded by a mile wide park and the feeling of continuity in terms of the rest of the city pattern is not realized in the approach to it. This second approach is also in conflict to the best surrounding uses of the central business district to further its development, so it becomes even more illogical. Diagram 10.

Continuity helps bring the plan of the city center to realize the objective of identity. Identity demands more than a meaningful visual and time relationship within the center and with the center's external relationship to other areas of the city; it also demands the psychological image of a center. It must be unique from surrounding land uses and activities yet

reflect their character and needs, and the character and needs of the whole region. In these respects it is the center that can give identity to the region and to the city for all the citizens.

As the investment in the status quo of the regional center is very great, it is difficult to place major emphasis on adaptability in light of the technology for achieving it at this time. Adaptability might be considered in three possible techniques: neutrality of structures, over-size planning and planned renewal.

Making the center of the region "neutral in its structural character" conflicts with continuity in time and with identity. As the center is the place which should probably best characterize the whole region and bring it to a coherent focal point, it would seem that the achievement of adaptability in this way would be defeating the purpose of coherence.

One way or another, the center to a certain extent usually contains the element of being over-sized -- not through planning for this but in the operation of the laissez-faire market economy. If there is not some provision for growth that is planned, then the surrounding land often becomes what is known as a "gray belt". This is a gray belt of disuse and misuse of land which is primarily being held as speculation of the higher value and growht of the central area in that direction. At the present time, the central area is meeting the demand for change by developing new lands at the fringes to a high level. This change is being provided at a high cost; it encourages land speculators in other places at the fringe.

and demands complete destruction and rebuilding of huge tracts of land. Then, when these new areas are built into the center, there is no means of adaptability provided in them.

A more possible means of achieving adaptability for a central business district is to plan for periodic renewal. In this area, renewal might be enforced with the amortization period, so that small scale conversion and change and rebuilding would always be taking place. If through such a program, the viability of the central business district into the future could be assured, then this would help to deter land speculation resulting in the development of "gray areas". This is because the actual size of the central business district seldom grows due to its relation to the walking distance of man -- but it moves. Movement of the area might then be stopped if the central area were constantly renewed.

c. Diversity

The central business district and the land immediately surrounding it should be the area with the greatest variety of land uses in the smallest area. This variety can contain virtually every element of the city and the region, but at a much more intensive scale and to a limited degree. The degree and intensity of this variety makes the regional center unique from any other centers which might occur in the area which it serves.

In addition to containing a variety of functions, the central business district should contain a choice in the expression of any function. For example, it would not include

only one kind of cultural facility but many kinds, from the opera to cinerama.

d. Summary

The goals complement each other on the whole to a large degree. However, if continuity in time is taken to be literal, then the present pattern conflicts to a large degree with safety. However, in plans prepared for the central business district, the basic elements of cintinuity can be kept, getting rid of those things which provide hazards. The other major conflicts are between the different ways of achieving coherence which have been stated and methods of compromise pointed out.

2. Shopping Areas

This category refers primarily to the automobile-oriented shopping area which has developed since the second World War. Within these categories there are several types. One is the very large scale single-purpose shopping goods center which serves about 500,000 people; An example of this is the Peabody Shopping Center. Another kind is the smaller single purpose center built in one unit but serving a much more limited population; An example of this is Dedham Plaza. Much allied to this smaller center can be a revitalized and redone traditional center, to meet the changed conditions of the 50's. The final type of shopping area has been known as the "neon strip". It is auto-oriented strip development of large single units each built and operated completely separately, structurally and functionally; these include everything from

the outdoor movie theater to the mammoth highway super market and the used car and auto dealer establishments.

a. Development

One of the reasons for the growth of these kinds of shopping areas is that the older-type-town-center area did not provide the convenience for the shoppers arriving and leaving by automobile. These conveniences include a place to park the car easily and within reasonable walking distance of the place of shopping. It actually then becomes convenient for the shopper to be completely free of worry about the automobile while shopping. Thus, there is need for these developments to be conveniently located in regard to a major traffic artery with sufficient parking separate from the shopping itself -- or else completely related to it, eg. the drive-in bank, movie, restaurant, etc.

Such convenient shopping areas are also efficient in terms of both the shopper and the shop. Its efficiency in many cases is derived because it is developed as a single purpose area which includes no conflicting uses. The efficiency of use is further heightened because it reflects the technology of the fifties, which is primarily the technology of the motor car, the super highway, and mass production of a wide variety of consumer goods. In addition, the development of the survey technique and locational theories has provided the basic research for the size and type of facilities grouped in the large centers. The neon row kind of facilities depend on the road and their power

of competition by their greater size from their more traditional competitors -- at this point in time this makes them efficient -- although they show no evidence of having undertaken any kind of economic research in terms of their location or size. In many ways, the present strong competitive efficiency which each of these kinds of shopping areas has, including the redone traditional center and the smaller single-purpose unit, is geared directly to both the consumer buying power and interests and the technology of mobility of today. The efficiencies which may prove to operate in the long run are those related to the efficiency of the consumer -- the separation from the auto and the adjustment of size to his walking distance (a relatively unchanging measure).

The efficiencies which seem to be more short run in character are those of being geared to the present form of movement, the present population pattern, and the present level of automation. First, in regard to the present form of movement, while the automobile seems to be the form of consumer travel which will be carried on in the predictable future, the potential change for goods movement in a metropolitan area is much greater. The possibility of centralized distribution and a system of pneumatic tubes or conveyors distribution not needing vehicles is not far removed. Second, the present pattern of population distribution is rapidly changing, with a continual lowering of overall densities and dispersion throughout a larger area -- which in effect makes shopping facilities more viable when spaced farther apart -- and

indicates a decline in at least the number of traditional centers. This present dispersion of population may be partially controlled by a metropolitan housing policy and land development policy; however, there is no substitute as yet for the private yard, which in the case of the Boston metropolitan area will lower the overall density. Third, automation in the shopping area is just beginning to c ome into being. A realizable automatized supermarket was designed by a group at Pratt Institute and printed in a recent New York Times Sunday Magazine. This supermarket, featured displays of a very wide range (wider than at present) of single items which were ordered by a punch from a consumer card with numbers and which was then delivered to the consumer's vehicle. This allows for completely different kinds of structures for all kinds of commercial units, where the warehousing of the goods is all out of sight -- and the appearance is that of a continual display window. However, it seems that none of these changes will drastically effect the pattern of these developments for 10 years -- but preparation should be made for changes after that.

These kind of shopping areas have the potential assets of being well-planned to serve the objectives of health and safety. This is true, due to the separation of vehicular and pedestrian movement and the separation of the function of shopping from the flow of traffic and from residential areas.

Furthermore, these shopping areas offer amenities both to the shopper and the shop because of these things. In the shopping area which has the aspect of a center (or the completely revamped pedestrian small type traditional center)

the interior layout can include pleasant window shopping walks with protection from the weather, places for shoppers to rest, areas for children, and some form of package delivery to the car. For the shops, the provision of display areas and their inclusion within an area which is equally pleasant provides each with a good location for capturing the trade of the shopper.

On the other hand, the neon row has the amenity of the motor-society...life can be carried on practically without walking. The consumer is the man dressed in his car -- and as man seems to have an affinity for this, it is an amenity for him to keep his "clothes on". It may not however, provide an amenity to the road, because there is necessarily many entrances and exits from these units which may provide traffic slow-ups or hazards for the road -- as well as the unpleasantness of the "neon row" itself.

The stimulus of development for shopping activities can be gained through making it most interesting for the consumer. In our economy and way of life, shopping and the spending of the growing family income is one of the chief leisure time occupations, as well as the primary occupation of many women. The major stimulation comes in the provision of efficient and convenient shopping areas both for the shopper and the shop -- and incites further development of these areas.

b. Coherence

The coherence of shopping areas is primarily in their

economic viability which is directly related then to their spatial pattern and relationship to other functions within the metropolitan area and the region, thus relating to some pattern or continuity. In their economic viability into the future, the shopping center must also retain some continuity in time, while having an element of adaptability which might be gained through neutrality of structure, by separation from other functional areas, or by provision of room for expansion or growth. Coherence may be also gained by the special identity of shopping, distinct from other functions.

The present growing shopping areas form breaks with the historical continuity of the location of the shopping functions in relation to other functional areas. The older type shopping areas were all-encompassing and true "centers" of the residential communities. They were dependent on both walking and the slow-moving vehicle bringing the goods and consumer to the center -- these in no way broke up the continuity of the residential area as a community. Today, the modern forms of movement necessary to service such shopping areas are disruptive to the residential community and not able to be handled in the spatial area of traditional centers without a great deal of rebuilding and redesigning (which is possible but costly). In addition, there is discontinuity with the past, as the pattern of population has been changing and dispersing to wider areas -- and as the needs of the stores have greatly changed. In fact, the floor space needs of such a common unit as a grocery store has grown

10 times since 1945 -- to be the most efficient kind of unit. While the small grocery is not a disrupter in a community, these new dinosaurs do not fit in the traditional-town centers.

Today's continuity of shopping areas is its continuity with the present values and technolog of society -- and in the space of the shopping area itself. The mixture of uses other than shopping in such areas is declining, e.g., the owner or manager of the store no longer lives above it. The service type activities such as lawyers, realtors, etc. have continued to stay in town centers -- and are part of residential or business areas more than shopping areas. These shops have changed little in physical character, in fact the trend to build them in small "homey" offices seems very strong. At this time, there is confidence within the people that shopping will continue along present trends, and thus for today the new form gives faith in the future. This, however, is more of a lack of imagination of the people than a real kind of continuity which should bring faith.

Actually the continuity of these new shopping area forms might better be evaluated in terms of their flexibility to unknown changes. At present, they have a certain amount of adaptibility as they are usually segmented from all other functional areas (except for transport routes) and operate independently. Thus, their use could be changed and it would not effect any surrounding uses. In addition, the barn like structures of many of these shopping areas are sufficiently neutral to lend themselves to adaptation to anything from a research center to a warehouse. This neutrality today gives

them a kind of lack of identity -- which is often tried to be offset by "flower-box" decorating and signs. This conflict does allow future adaptability. In addition, the shopping areas can achieve flexibility if they are oversized -- either by having room for expansion in grounds or in buildings. Again, they often have this in their lack of relation to closely intense built up areas and in the provision of large scale parking lots around them.

The lack of identity -- or identity of the neon sign only -- does allow adaptability -- but tends to create a dead-type form with little interest as an element of the landscape.

The coherence of the shopping area is tied to its internal planning, location, single function and possible adaptability. It can further achieve this coherence in its adaptation to suit the future needs and population pattern of the metropolitan area.

c. Diversity

Both variety and choice are extremely limited within each shopping area -- as it has become more and more specialized. Since the shopping areas are devoted to a single function and serve the needs of efficiency and convenience, variety is possible between the different shopping areas. There is both variety and choice between the different areas and even an identifiable diversity of form (between the neon row and center type).

The objective of choice is fulfilled usually by the location of more than one store of each kind in each different shopping area. Shopping which in its very definition includes choosing is then possible. The choice between different shopping areas would also be possible to attain at the metropolitan scale. This would be a limited degree for any one consumer because of the wide spacing between the various areas in relation to the spread of population.

d. Summary

The kinds of shopping center discussed seem to be anomalous in the problem of rationalization in the goals of physical development, distinct from every other functional area. They seem to have made the greater change of any functional area in the adaptation to the way of life and economy of the present day. However, in this adaptation they provide a unique set of problems in that they reinforce the status quo and continuation of the present trends.

3. Production Areas

The distinction between the two production and terminal areas -- an area of production and its closely associated activities (eg., research and administration) has a high ratio of men and facilities for men within it. A terminal area, on the other hand, is mainly for the handling of storage of a product (or people) in transit -- although the storage period may be relatively long.

a. Development

In the development of the areas of production, efficiency is of primary importance. It is significant in terms of the location, site and scale.

In terms of location, it can be thought of along with convenience for production (convenience for the worker will be treated separately), Location for the development of production sites demands access to alternative forms of transportation. Rail and major motor-vehicle routes connecting other areas of the city and the region are of primary importance for most manufacturing sites. Then, for more specialized industries location near the port becomes important; and in growing significance is the relation to major and small airports, particularly in the inter-regional movement of people and special goods. Inter-industry dependency results in an increased development potential when these industries are located close to each other -- perhaps even on the same site. An example of this is the relationship of research and development industries on all sides of the Air Force Base at Bedford. The function of these facilities is so closely associated with the air base, that their most efficient and convenient location is immediately adjacent to it. Other industries also function most efficiently in such close groupings thus demanding large areas of industrial land in one location. The advantageous development of industrail land also needs suitable utilities for sewage,

power, and water to service the site. In some cases, direct disposal to the ocean can become an added attraction of the sight. This is particularly true in the development of plants having any kind of radioactive waste.

The demand of size of industrial areas is related both to the kind of production taking place and the interrelation of an industry to other industries. In addition, today, this is closely related to the goal of adaptability and usually tempered by it in the demand by industry for more land than it particularly needs a t the present time to give it potential for growth. These factors tend to result in larger peices of industrial land, instead of the smaller fragments that were associated with earlier periods of manufacturing.

Efficiency is important in the planning and structure of the work area. Thus, it is not only efficient to have certain activities located near by each other, but they should be in a rational relationship to each other and to the transportation facilities.

Health and safety are necessities in the planning of industrial areas. This can be achieved by setting high building standards and in planning the relation of the movement of the people and goods to industrial areas with least conflict with other flows of movement.

Health and safety, convenience to living areas and amenity are these aspects of development which effect the

worker within industrial areas. Convenience, in a day when there is mobility for each individual any way by the automobile, has greatly expanded the potential areas for living in regard to place of work and conversely, place of work in regard to place of living. For various reasons, commutation is growing throughout the entire world (including Russia). A common reason seems to be that of the desire by man to create his own immediate environmental conditions as the increasing growth of the metropolis makes him feel more helpless in the creation of his total or the metropolitan environment. Another is his desire to make use of his potential choice of where and how he will live. In addition the federal "subsidies" for home ownership make this more obtainable. Thus, in planning the work area - living area relationships for a metropolitan area, it is no longer possible to work within a rigid time-distance concept. If work and production areas are provided along major routes of highway access and when possible on or near commuter-mass-transit in various sectors of the metropolitan area, this would then allow those who have the choice to live nearer where they work to find such a place.

The amenities of a working area are those things which make it pleasantly suitable for man to carry out his functions in regard to the production process. As work demands a high level of concentration on the output, whether it is in the form of a produced good, research or administration, the external surroundings (outside of the immediate area

of performance) are of less importance than in areas where man is enjoying the benefits from his efforts. This does not mean, that a pleasant site is not desirable, but that a site with amenities has more significance if given to another functional area (assuming that the entire metropolitan area is not equally amenable). While it may add to the prestige of the industrial area, its effect on production or the development of the work area is relatively less than for other areas. The amenities which do affect industry are the qualities of the greater community or metropolitan area in which it is located as an attractive place for the living of the workers.

In the development of production areas the combination must be found that maximizes both the stimulus for production by machine and production b man. This comes in the balancing of the qualities of efficiency, and convenience against health and safety, amenity and convenience for the worker.

b. Coherence

Today, with the rapid changes taking place in industrial technology, flexibility is being sought in many ways to assure some coherence in its competitive advantages into the future. New England has seen radical changes in the historical continuity of industrial development during the last 20 years; these changes bring out the necessity for a flexible industrial character. In particular sites this is sought in providing more room than necessary, neutral structures,

and in the separation from other land uses of industrial development.

Many larger industries, to have room for expansion, are moving to the present edges of the metropolitan area where the land is cheaper. In many cases this conflicts with both convenience in terms of facilities provided and the efficiency of production in its relation to other areas and a variety of transport forms. As the fringe areas become developed as industrial belts (as is occurring along route 128 -- and the Western routes connecting Boston to Worcester and then New York) the facilities are being provided and new relationships established, while the cheap land is becoming more and more expensive. At any rate, great value is still put on the provision of a large industrial site so that there is room for expansion in the one locality. This suggest, that both the industrial areas within the city and toward the center of the metropolitan area must find ways of providing large blocks of land at reasonable prices for industrial development to bring in new ones, as industry is clearly willing to pay a certain price-factor to obtain flexibility through this way.

Modern industry is also trying to provide itself neutral structures which give it a further element of flexibility. This is being done to the point of monotony and lose of identity of any particular industrial function. Exactly how adaptable it really makes them, except for other functions at the same scale (perhaps shopping centers

or technical schools or other industry) as yet has not been proven -- nor how much identity could be achieved in their structure and site plan giving them the same amount of adaptability is a question that will need further study.

The breaking of industry into a single use segment further gives an element of adaptability for other uses. This again is being practiced at present. However, the insulation of these sectors especially in the fringe areas, and their relationship mainly to major automobile and rail transport is limiting to this adaptability.

On a larger scale, adaptability in terms of locational demands for industry especially in relation to transportation means must also be considered. While location on a railroad siding is still considered necessary, there is also greater demand for location on major inter-state highway routes (with quick accessibility to expressways preferred), and enough room to incorporate small air vehicle facilities on site if not located near air terminal facilities. The locational demands are also related a great deal to the continuity in time of the development of the technology of particular industries within the region, giving further coherence.

Today, the electronics industry in the Boston Metropolitan Area seems to both have adaptability and continuity in time. This is because of its close relation to the research facilities in electronics located in the metropolitan area which

are unique in their concentration on the East coast (although there is a similar concentration on the West coast). The confidence in this research and development, and its constant introduction of changes -- gives a built-in aspect of flexibility by the fact of being at the point where the new technology is being developed and thus having competitive advantage. This is in contrast to the textile industry, which had continuity in time and could have had adaptability through the forms suggested, but was not related to or as dependent upon research and development in the field.

Continuity in time is relatively important for industry in two respects: (1) the development of a skilled labor force to serve it, and (2) the assurance that the location will best serve its particular industry. However, with an extremely mobile labor force for the level of skill that modern industry is dependent on, this becomes insignificant in regard to other forms of achieving coherence. In regard to a plan for the second aspect of continuity in time, the relationship of a development plan, historical location and zoning ordinances should be such that the industry is relatively sure of having a stable location. Again, practically today this is a secondary consideration to industry; industry is wooed in terms of zoning ordinances as it boosts the tax rates in a system of local town autonomy --and is not the wooer for land. Continuity in time today, thus becomes most important to industry in its aspect of being flexible to future technological changes -- and thus

having a promising future at a particular location, not just a "secure" future.

Identity is more important to industry in terms of the economic model for the region than the physical plan. The identification of the industrial land in corridors or belts or of the building to look like a certain type of plant, (although one shoe manufacturer wanted his plant to have the dimensions and look of a shoe box with staircases in the form of high heels), does not make an industrial pattern coherent. A metropolitan region gains identity in the way that it fits the other regions of the nation and the world -- and further in the way that it suits the citizens of the region in providing them employment. Thus, in achieving identity, the physical plan should take recognition of the particular kind of industrial grouping of the Boston metropolitan region in present form and in prediction -- and accommodate it in the land use pattern to best suit its particular needs.

c. Diversity

For stability, the industrial pattern should contain an element of diversity which in turn affects the physical plan. Diversity of kinds of industries will probably lead to more variety in the form and location of the industry in the region. It is also important to stimulate some variety in the form of similar industries in adding diversity to the industrial landscape. The efficient, adaptable neutral low box used for "modern" industrial development is depressing

in its sameness. Yet, in these developments which often combine administrative, research and production functions, there is a possibility for more variety in the groupings and the design of the buildings while being sufficiently neutral.

With a diversity of industries, variety is needed for the carrying capacity of the industrial land -- or potential industrial densities. It is significant to provide land for industry with a low number of workers per acre and like needs, and for high densities of workers -- who would probably need location on several forms of transport routes. The variety of different industrial densities would also bring diversity to the form of industrial areas.

Variety in terms of different kinds of work activities throughout the region has advantage of providing choice for the population in forms of work. This goal is extremely significant at the level of the entire metropolitan region, giving it industrial diversification, but any single area would better be specialized from the viewpoint of the interrelation of the industries.

d. Summary

In the combination of achieving development, coherence, and diversity, the goals are relatively workable in relation to each other with the qualifications that are noted. Those which stand out in importance for the drawing of industry and holding it within the region are those which offer efficient production and place the particular industry at a

competitive advantage. If these are not considered first and given the most weight, the plan fails in terms of its economic implications.

4. Terminal Areas

a. Development

While terminal areas are in many ways akin to work areas, they differ distinctively because of their closer association to the various patterns of movement. The development of the terminals grows in importance as the greater metropolitan area grows, and the reliance on the advancing technology of transportation becomes stronger. Both of these factors tend to create the development of both a more complex system and inter-linkage of forms of movement. In the past, the regional center has played the only major role as terminal for the metropolitan region, but with the modern communication and control devices, the actual terminal facilities no longer are necessarily located at the point where the decision of their use is made and co-ordinated. Thus, while the regional center will probably continue with the focal role, the actual districiution of terminal areas can be spread out in a rational pattern to gain both efficiency and convenience in terms of the original starting place and final destination of the goods or people.

The efficiency of a terminal area is partly derived from its relation to either industry, transport facilities or both. The cost of transportation and storage is greatly added each

time that it is handled and changed from one form of transport to another. Thus, an efficient location is one which keeps these movements to a minimum. In addition, storage locations should be located in areas where the value of land is low and is not likely to change.

Convenience is closely related to the efficiency of location of the terminals. For a terminal closely related to industry or another prime user of goods, an additional close relationship to more than one form of transportation is highly desirable....this makes them both more convenient and adaptable to changes as they are not dependent on one type of transport. In addition, as terminals are places to work, their convenience to lines of transport for the worker is also relevant. Convenience to the point of decision about the goods is less important, as suggested because of the potential of modern communication. Thus, the central offices or points of decision for the movement and transferral of certain goods could remain in their traditional location -- the central business district.

In the interests of health and safety, as terminal areas are involved with the large scale movement of goods or people which necessitate location and utilization of transport facilities, which need specific kinds of conditions, their separation for living, institutional, and recreation areas is essential. Furthermore, the separation of the terminal function and its associations is also important to the safety and agreeableness of the shopper in the shopping center. Thus, its close associations should only be with movement and

industrial areas -- with the exception of some areas of shopping if it does not interfere with the shopping function.

The amenities for terminal areas, are in the cheapness of land, which also lies in close association to movement, industrial areas, or a relative center for the areas to which the product will be distributed.

The stimulation of facilities for terminals is directly related to the position of Boston as a transportation center -- and this is related to the greater region to which it serves and its growth. The development of every potential kind of transport and associated adequate terminal areas is then closely related to the kind of role that Boston may be equipped to play as a center.

b. Coherence

Adaptability could be thought of in many ways for terminal areas: the relation to more than one kind of industry or activity; neutrality of structure; segmentation from other use areas. First, it is convenient as well as serving the goal of flexibility for a terminal to be related to more than one kind of movement or industrial area. Obviously, the terminal areas which serve the central business district, have this feature. In addition, in the growth of the metropolitan area, it might be wise to think of providing additional terminal areas which gain long run viability through the association with more than one particular user or transport form, but not related to a nother smaller central business district. For example, a terminal area might be related to a

group of industries or several industrial areas and a suburban shopping center, and be served by railroad and expressway and perhaps small airport.

Most terminal areas have achieved the distinction of neutral structure, in fact, the warehouse is often used as an example of a neutral structure. However, their adaptability is usually limited in so far as they are not segmented from other use areas. They are usually closely associated with an industrial area and transport, which makes them unamenable for adaption other than to the extension of industry. As they are usually closely tied to this industry and inter-dependent, the adaptability is thus lost. In terms of changing industrial or transport patterns, the goal can be achieved through the relationship to more than one activity and in addition having a neutral structure. The cost of segmenting terminal land completely, is that of loosing its qualities of convenience and efficiency, which probably make this impracticable.

Identity is again found in the relationship to the uses which it serves. To draw an analogy -- the terminal area in the city may be compared with the closet in the house. While in themselves, closets usually do not identifiably stand out -- they are necessary for the efficiency and amenity of the rest of the house. Closets are not themselves equipped with amenity or identity, and as such are usually not the "show" element of the house. Likewise, lack of identity for terminal areas and their function in service to other land uses make possible the working of a city and metropolitan area which does have identity.

Continuity complements convenience, in terms of space -- in fact the inter-twining of the terminal land with movement and with industry makes it act as a link. Continuity in time, on the other hand, emphasizes the need for rational locations closely related with a number of different activities - or more intense and profitable use.

c. Diversity

With a diversified group of terminals in the metropolitan region, they would both be related to a variety of different activities and would be located throughout the region.

A variety of terminals or terminal facilities would allow a choice for the storage of goods or people related to different functions or en-route to various areas (international or city, commerce or production, etc.) The diversity of terminal areas is most closely related to both diversity of economic activity and of the modes of transport. As such, it reflects a well-rounded economic system.

d. Summary

The existence of special terminal facilities is necessary for a city that has the role of regional transportation center as well as being a primary place of production and trade. In playing an intermediate role between movement and other activities, the goals form a special pattern of qualitative needs in the location and provision for such areas.

e. Movement

In considering movement, every form of flow of goods and people within the city is considered, except those which do not have discreet paths. This includes the consideration of movement below the surface (through wires, pipes, and tubes) - on the surface (on roads, rails, paths - on land and on water) - above the surface.

1. Development

Safety is a basic necessity when planning for movement. Two considerations are essential; the relation of the flow of movement or object of movement to any other flows or objects of movement in the same path or at points where paths intersect; and, the relation of the flow of movement to surrounding functions.

In the relation of the flow of movement, the separation of different kinds and speeds of movement makes the flow safer. This has resulted for instance, in the placing of wires carrying electric current either above or below the surface of a ribbon of flow. In more refinement, it might be related to the differentiating between slow moving or vehicles moving who desire frequent hesitation (eg., the errand running housewife, or the girl-hopping romeo) from the faster through movement. Separation at intersections of various directions of flow, or their inter-twining so that both can keep flowing with little friction is then significant.

In the relation of the flow of movement to various functional areas, the kind of movement should complement and

provide convenience to the associated function. Thus, for both convenience and for safety it becomes logical to think of the needs of the areas in the planning of the vehicular system of movement. The development of both are inter-related.

Convenience and efficiency become relatively important in the location and determination of the kind of movement as it is related to other city functions. Convenience of the system of movement may be refined to consider that which is inter-regional from that which is intra-regionally or intra-metropolitanly significant.

Inter-regional movement usually serves the entire region, and as such provision to get on inter-regional flows should be from the center of the region. At this point is the place where all inter-regional flows should come together and as much as possible be integrated into one system, and related to the intra-regional, intra-metropolitan system. In such a way, the regional center is kept the most convenient point to any other point that might be chosen. Specifically, in the case of Boston, this would concentrate on a development of the sea port, airport, long haul rail facilities, and the expressway system at the center -- and then coordinate it through joint terminal facilities with the intra-metropolitan system. This does not mean that there should be no facilities for gaining access to inter-regional movement outside of the regional center but that for the convenience of all the people (and the maintenance of the role of center) the major concentration must be at this point.

The intra-regional system may have a discreet number of focal points with relationship of several types of transport which in turn feed into the regional center -- and the metropolitan system may feed in either to the intra-regional system or directly to the center. The positioning of focal points of these systems would then relate to activity areas of concentration outside of the center itself - and would have their own terminal facilities.

Efficiency of cost and effort is achieved with the laying out of the ribbons of movement directly between major points of origin and destination. In addition their location through the major activity regions to feed them directly is necessary. If the routes are not laid out through the major regions of activity, they usually tend to create a new line of activity along them associated particularly to points of access. Thus, because of the efficiency and convenience gained to surrounding activities or uses -- the positioning of a certain kind of route may stimulate other development. In the laying out of a transport system for a metropolitan region focused on a single center, the most efficient lines of movement are directly from the center to the areas which the center serves -- or directly between this regional center and the center of another region to which it is most highly related. In addition, it is in the interest of efficiency that the least number of routes are used to their optimum carrying capacity -- this is true of feeder as well as major routes.

Amenity often conflicts with the efficiency of cost and effort -- in so much as it is the amenity of being a pleasant route for the flow. Need every route be pleasant for that which is flowing through it in terms of views to look at and surroundings? Obviously, for the movement of goods this is not important -- only for those ribbons which are primarily moving people. Then if there is a choice between an amenable route and a convenient one -- in cases except where the flow is recreational in character -- convenience and efficiency usually have higher priority. Thus, when amenity conflicts with either convenience or efficiency of cost or effort, it is not necessary to provide except for recreational routes for the flow of people.

The amenity of having a flow free of frustration is a completely different matter. This actually complements both efficiency, convenience and safety. The freedom of frustration is usually provided in planning a route which services adequately the maximum amount of flow at a desired rate of movement. Unlike pleasantness, freedom from frustration is achieved more through the design of the route itself than the activities surrounding it.

The achievement of these goals must be then complemented by a stimulus for the best use of each part of the transportation system. This can come through the layout of a system with various components, each component of which is most closely related to the activity which it serves. The need for total design of the system and its achievement brings it to an

optimum development in relation to the function of the entire metropolitan area.

2. Coherence

The goals relating to coherence further emphasize the need for total design and coordination of the system of movement. Coherence in time is important for the transportation system as it forms the channels through which all activities inter-relate. These channels must remain meaningful over time -- if the activities are going to continue to exist.

Continuity from the past into the future is based on the relation of ribbons for flow between major flow generators. If these have stability over a long period of time, the ribbons between them will be lasting, regardless of the kind of flow which makes use of them. For instance, with the decline of rail lines into dis-use their rights-of-way are often taken over for other forms of movement because the ribbons still serve the major traffic generators. However, these do not really have adaptability -- as the special purpose kind of lines for movement, the rails themselves are not longer usable, except when converted to another kind of rail movement (from freight to rapid transit, for instance). It then becomes important to consider adaptability to change in a wider context. Neutrality of structure for the various kinds of flows of movement is practically impossible to even think of because the forms of movement have developed in such very specialized ways with discreet specifications needed to be followed, for optimum execution of movement. For example,

for the automobile turning radii of special sizes are needed, interchanges that are separated at certain heights -- different specifications are needed for the same things for rail vehicles and for the airplane of today there are specific needs for length and surface of runways which will be obsolete in the future when vertical take-off is perfected. One possible way of achieving adaptability is through the provision of the routes of movement with oversize rights of way. Thus, more movement can be provided along one channel or a radically different kind of movement.

Continuity in space for the various systems of movement is a self-evident requirement. If there is a break point in the system, the whole flow is curtailed. Thus, each system must fit completely together for the whole region -- yet be separated from other systems to achieve safety, efficiency and convenience -- and still come together at special points.

In addition to gaining coherence for the system through continuity and adaptability, identity of the kind of flow helps to differentiate the system. Both the kind of object moving in the channel or on the ribbon and its relation to activity areas -- gives it an identification. For example, the planning of mass transit routes through the highest density residential areas to the areas of most work or trade in a form pleasant for the passenger, identifies it from truck routes to service terminal and industrial areas. This latter kind of route would connect various terminals or terminals to industry or trade areas, with little consideration of amenity, and would

relate areas where the greatest amount of bulk goods were used or stored and not where the greatest number of people worked or traded (when these two are different).

3. Diversity

Diversity through a variety of movement types to allow a choice, is important only on the metropolitan scale. At this scale it is associated with the factor of connection between both other regions and all segments of its own region. Thus, the center should include the focus or access to every possible kind of movement. In this way diversity complements the other goals.

If however a variety and choice of forms of movement were related to all smaller scales then conflicts would develop with the goals of coherence and development. Thus, at any other level there may be either a limited choice of modes or dependence on those modes most directly related to the activity of that segment of a region. For example, an area of recreation and institutions might only be served by modes of movement along highways and through pipelines and wires.

4. Summary

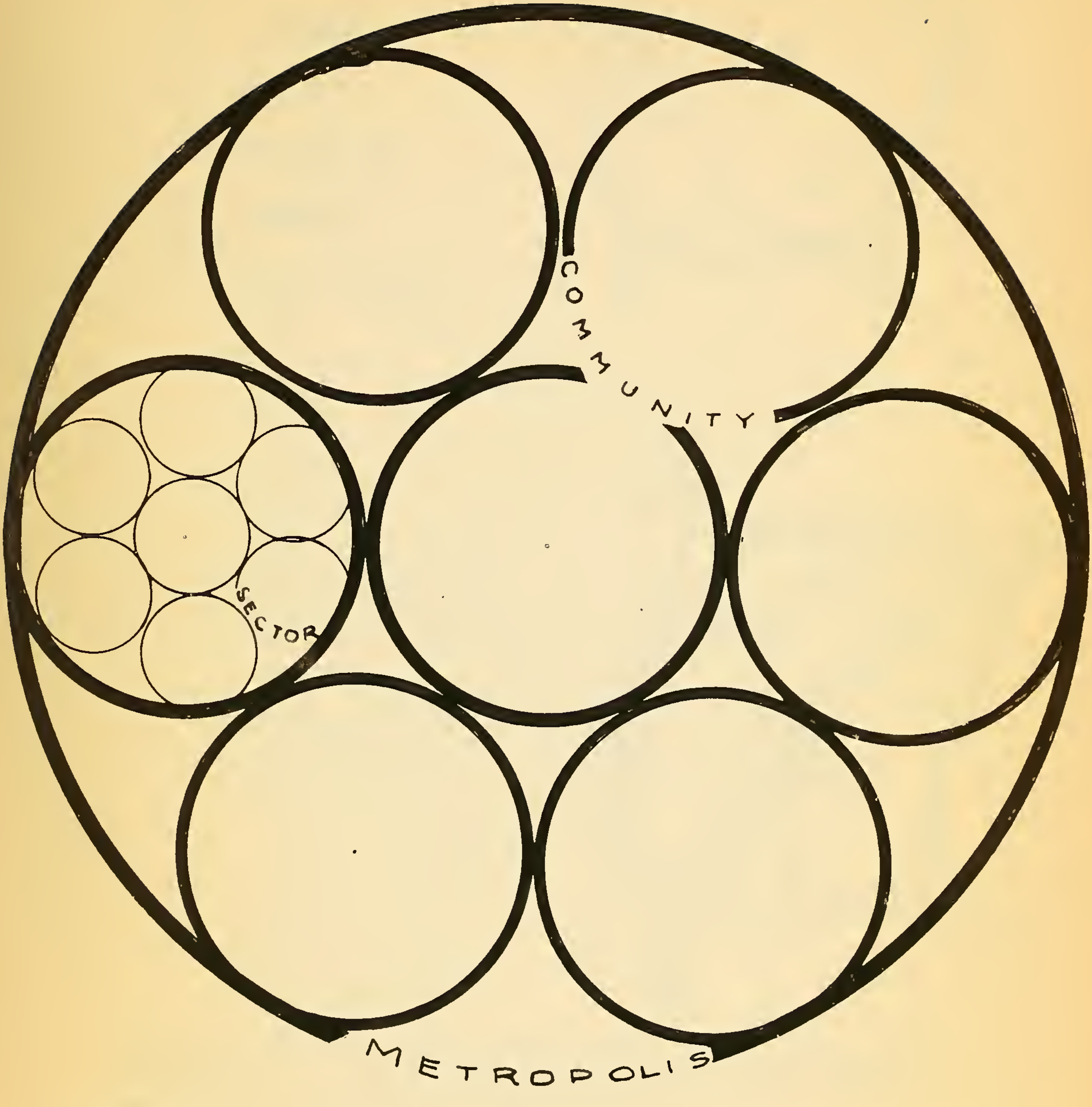
Although there are conflicts between the efficiency of cost and amenity, adaptability (by being over sized) and diversity at less than a metropolitan level, these conflicts are capable of resolution. In fact, variety and choice were deemed unnecessary at less than the metropolitan scale and so are not significant conflicts. Amenity through pleasurability is only

a conflict on those specific roads where this is important in regard to the surrounding of the flow, and in these cases would be sought to be compromised in design. Adaptability through being oversized may increase the cost of a network of transport at the outset -- but it may be the cheapest way of achieving long run efficiency. In this light, it is important to relate the plan for a present transport development to future trends in need and growth in direction and proportion of the metropolitan area. Then, perhaps, adaptability and short-run cost efficiency may be compromised.

The movement system forms both the nerve and blood-vessel system which all the city needs to live and grow. It interrelates all other areas with a highly sensitized feed back system; the provision of a certain system of movement through an area may completely change its function; the clogging of movement through an area may act to deter further development and perhaps create obsolescence; and the obsolescence of a mode of movement and its path may completely change the function of the area around it.

As the metropolitan area grows in complexity, the system of movement also must become more complex to serve the growing number of inter-relationships of functions. Thus, with the growth of size and complexity, the feed-back between the movement system and the functional land use areas grows more in importance. This makes it practically necessary to plan the functional areas around the movement network, which in turn is related to the generations of the functions in terms of movement. The problem in doing this is that change in the

movement system cannot really be accommodated, only growth. Planning in this manner commits the metropolis to a given system or systems of movement for its operation to best fulfill the goals of development, coherence, and diversity. This emphasizes the need to plan the system of movement according to projections to the future and not on the basis of the present functional relationships so that the plan will be workable for as long a period as possible.



IAGRAM I.

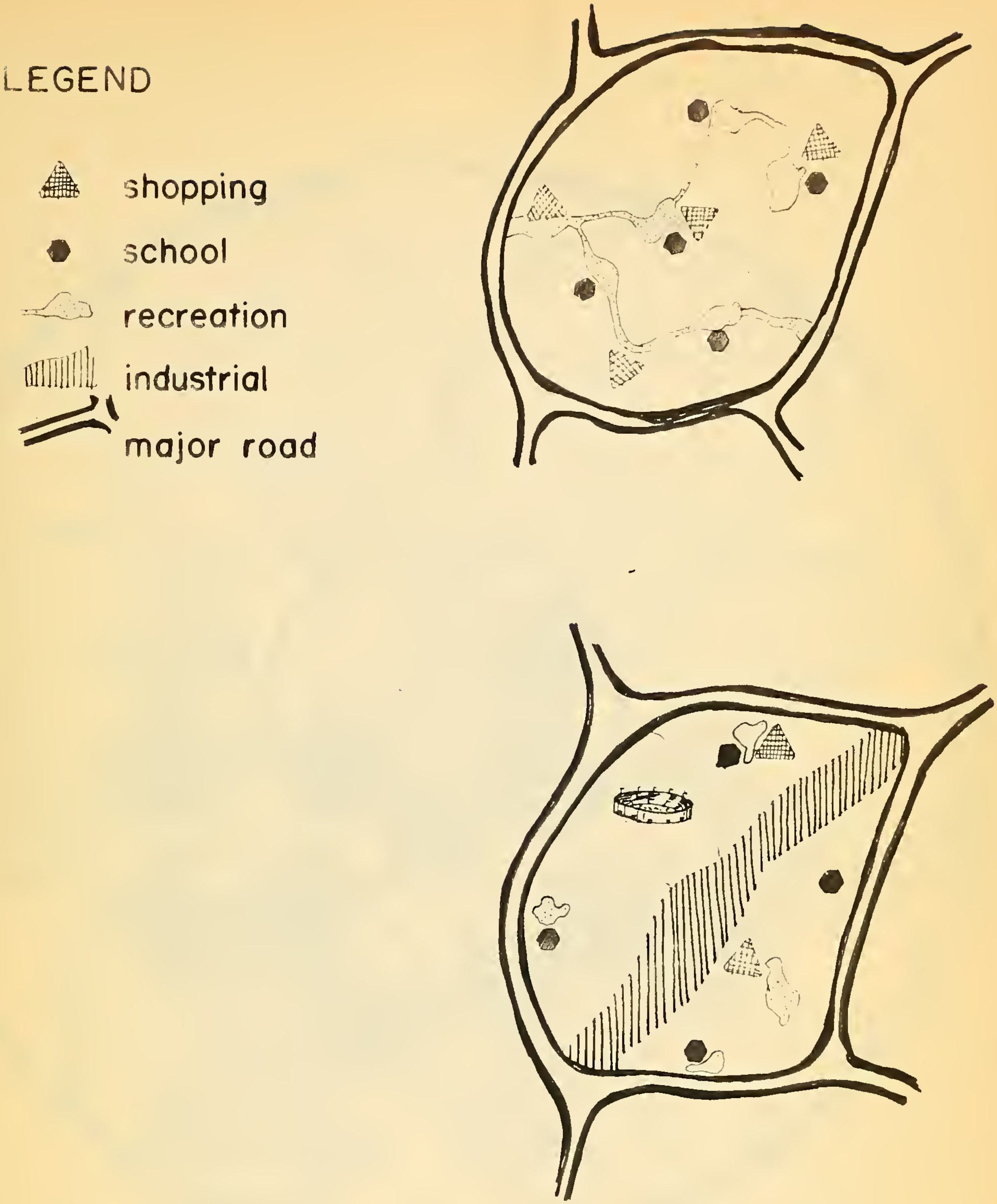


DIAGRAM 5. CONTINUITY AND DISCONTINUITY OF SPACE IN THE COMMUNITY

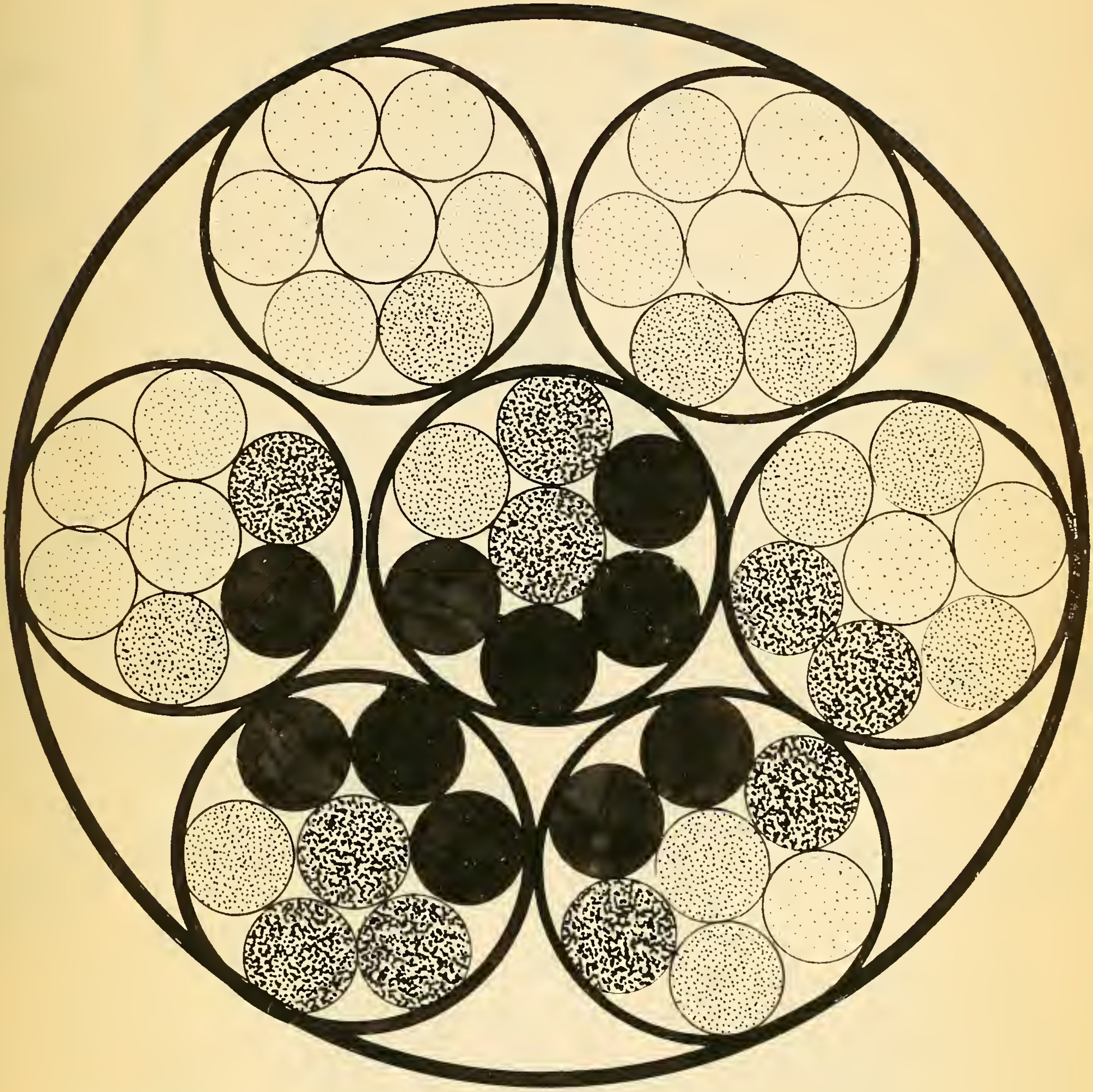


DIAGRAM 6.

Variety at the Metropolitan and Community Scales

RESIDENTIAL AREAS

■ CONFLICTING GOALS

⊞ COMPLEMENTARY GOALS

			HEALTH	EFFICIENCY			AMENITY		CONVENIENCE		STIMULUS	ADAPTABILITY			CONTINUITY				IDENTITY			VARIETY			CHOICE		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HEALTH AND SAFETY		1					⊞	⊞	⊞	■		⊞		⊞			⊞	⊞									
EFFICIENCY		2					■	■			■	⊞	⊞	⊞	⊞	⊞	⊞	⊞									
		3																									
		4																									
AMENITY	(PLEASANTNESS)	5	⊞	■						■		⊞					⊞	⊞						■			■
	(FACILITIES)	6	⊞	■					⊞		⊞		⊞	⊞			⊞	⊞									
CONVENIENCE	(INTERNAL)	7	⊞					⊞			⊞						⊞	⊞									
	(EXTERNAL)	8	■				■	■														⊞	⊞	⊞	⊞	⊞	⊞
STIMULUS		9		■				⊞	⊞										⊞	⊞	⊞		⊞	⊞		⊞	⊞
ADAPTABILITY	(SECTOR)	10	⊞	⊞			⊞						⊞	⊞	■	■		⊞					⊞	⊞			
	(MIX)	11		⊞				⊞				⊞		⊞	■	■	■	■					⊞	⊞			
	(RENEWAL)	12	⊞	⊞				⊞				⊞	⊞		■												
CONTINUITY	(TIME)	13		⊞								■	■	■					⊞	⊞	⊞		■	■		■	■
	(SPACE, METROPOLITAN)	14		⊞								■	■				⊞	⊞	⊞	⊞	⊞	■			■		
	(SPACE, COMMUNITY)	15	⊞	⊞			⊞	⊞	⊞				■			⊞		⊞		⊞	⊞		■			■	
	(SPACE, SECTOR)	16	⊞	⊞			⊞	⊞	⊞			⊞	■			⊞	⊞				⊞			■			■
IDENTITY	(METROPOLITAN)	17									⊞				⊞	⊞				⊞	⊞						
	(COMMUNITY)	18									⊞				⊞	⊞	⊞		⊞		⊞						
	(SECTOR)	19									⊞				⊞	⊞	⊞		⊞	⊞							
VARIETY	(METROPOLITAN)	20								⊞						■									⊞		
	(COMMUNITY)	21								⊞	⊞	⊞	⊞		■		■									⊞	
	(SECTOR)	22					■			⊞	⊞	⊞	⊞		■			■									⊞
CHOICE	(METROPOLITAN)	23								⊞						■						⊞					
	(COMMUNITY)	24								⊞	⊞				■		■						⊞				
	(SECTOR)	25					■			⊞	⊞				■			■						⊞			

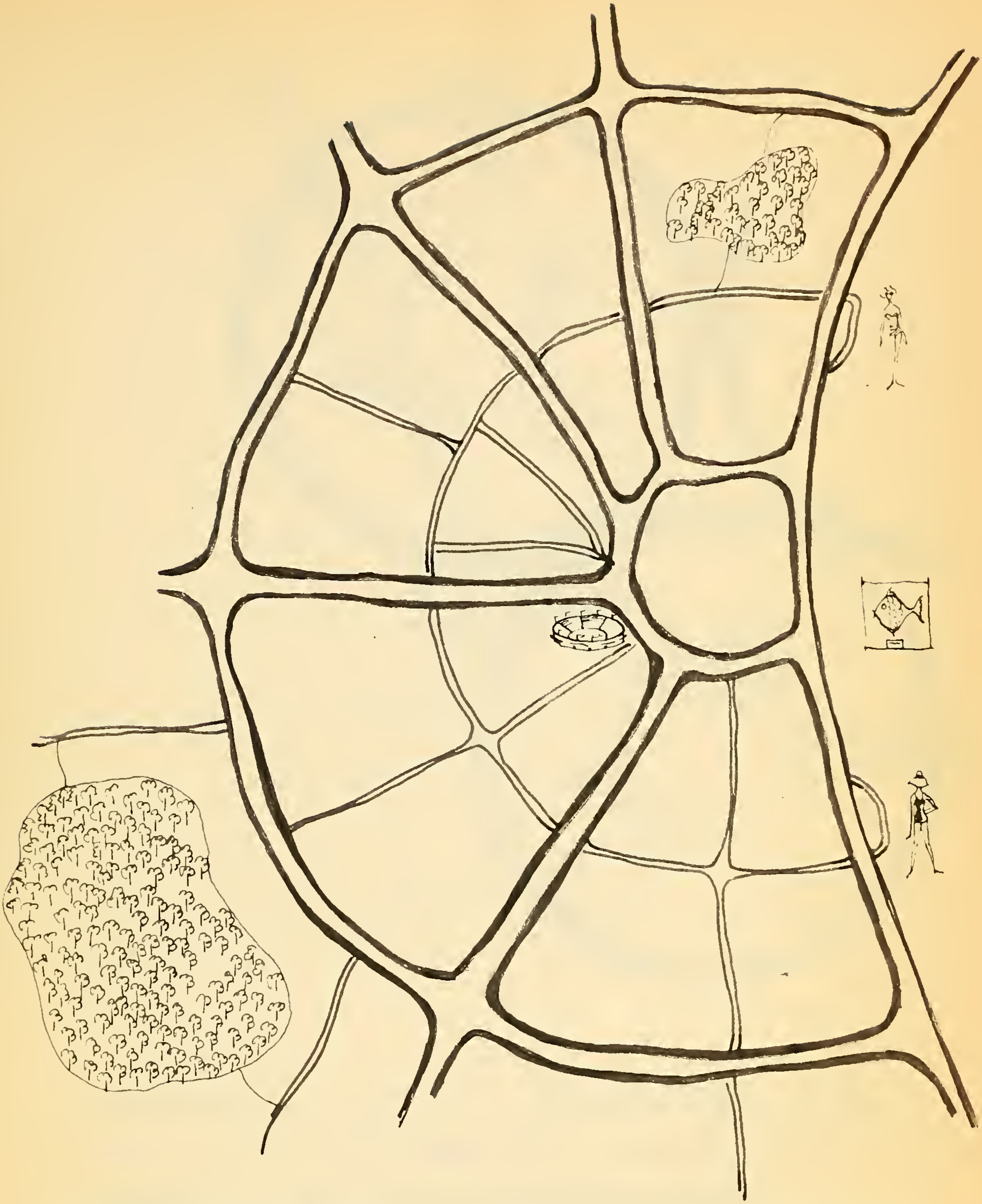


DIAGRAM 7. REGIONAL RECREATIONAL AREAS - ACCESSIBILITY NEEDS

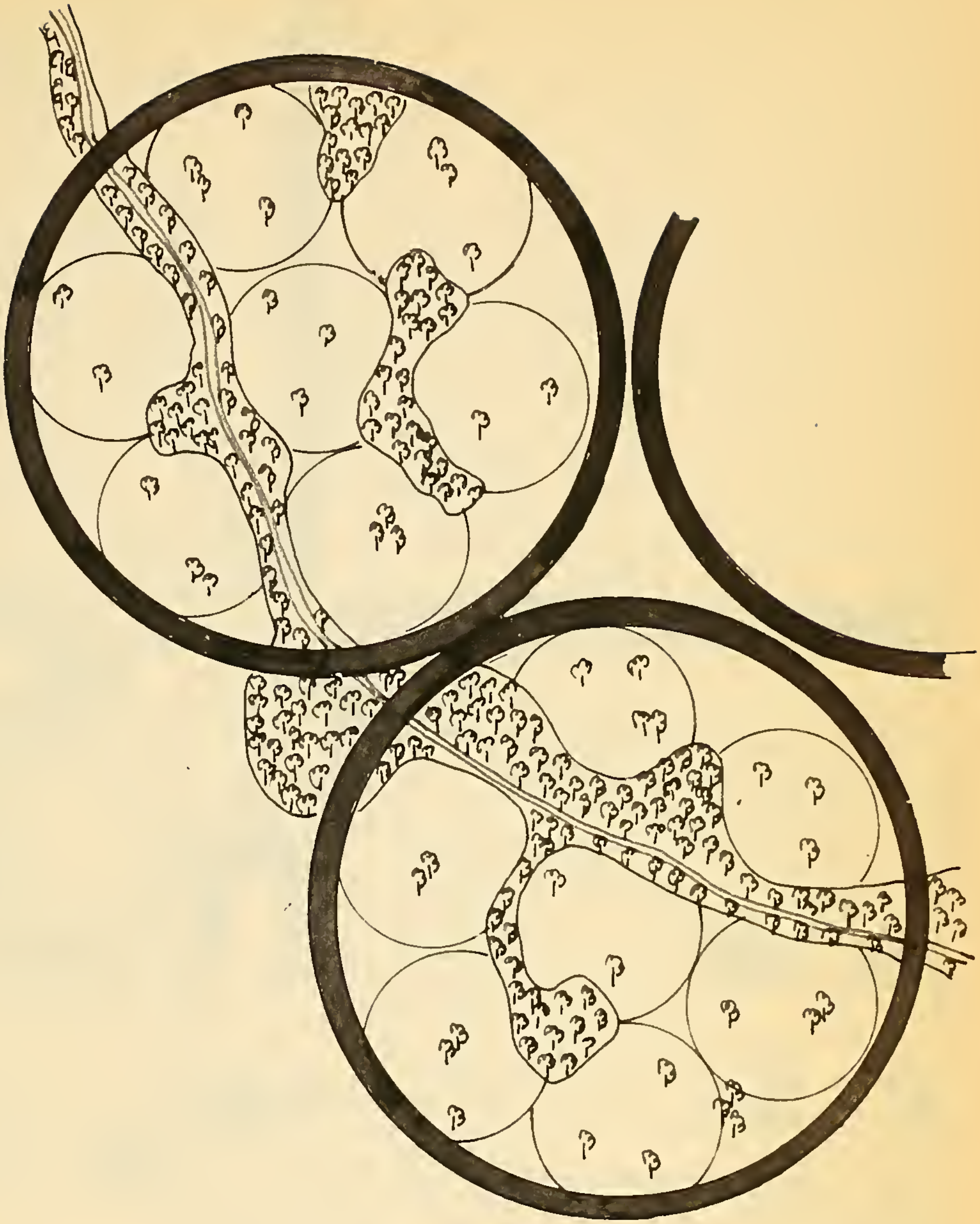


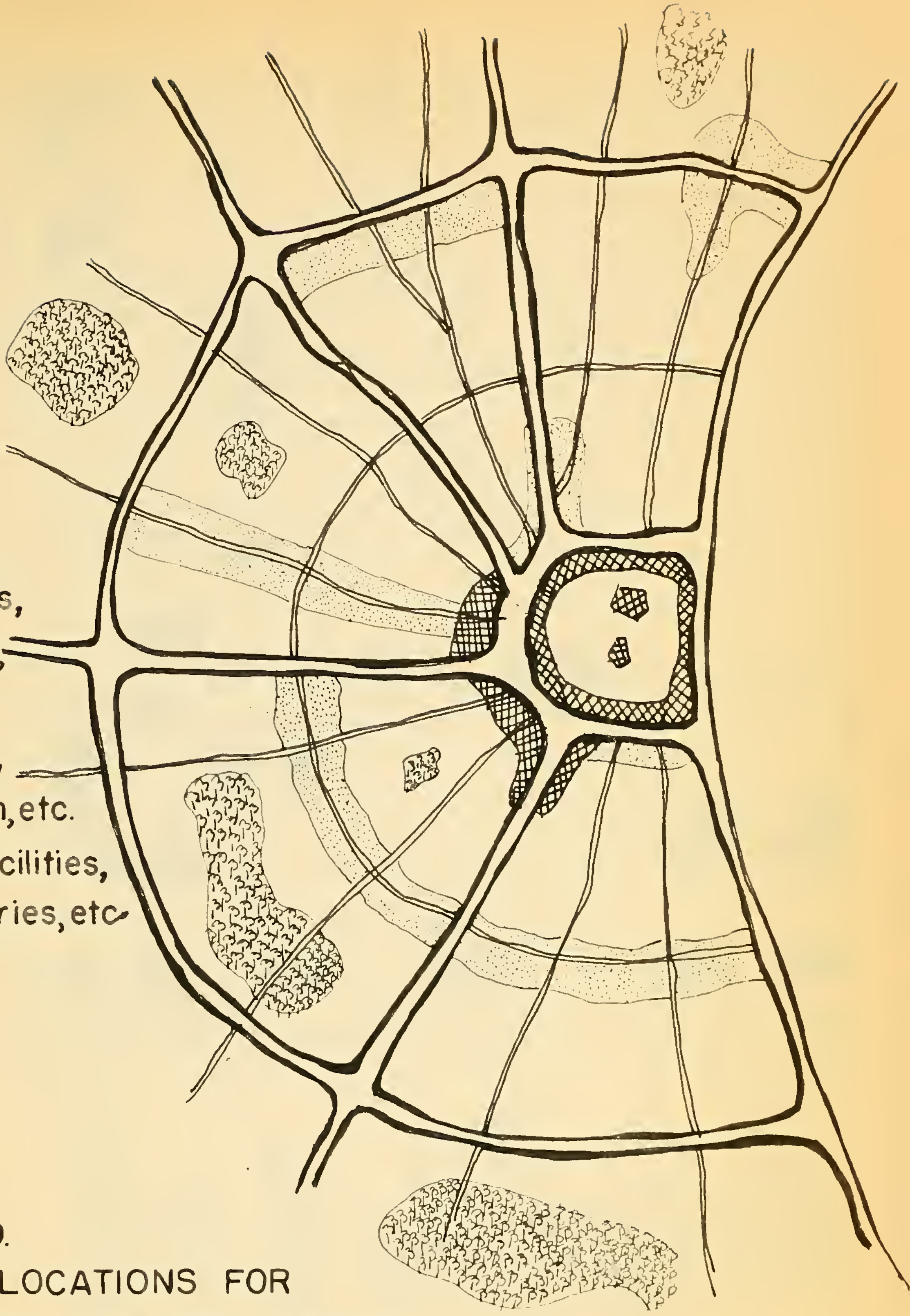
DIAGRAM 8. SCALE OF RECREATIONAL OPEN SPACES AT THE COMMUNITY AND SECTOR LEVEL, POSSIBLE RELATION TO PARK ROAD

OPEN SPACE - RECREATION

■ CONFLICTING GOALS

⊞ COMPLEMENTARY GOALS

			HEALTH	EFFICIENCY			AMENITY		CONVENIENCE		STIMULUS	ADAPTABILITY			CONTINUITY				IDENTITY			VARIETY			CHOICE		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HEALTH AND SAFETY		1					⊞	⊞		■	⊞																
EFFICIENCY		2						⊞				■	■	■	⊞	⊞	⊞	⊞						■			■
		3																									
		4																									
AMENITY	(PLEASANTNESS)	5	⊞					■	■	■	⊞	■		■	⊞	⊞	⊞	⊞					■	■		■	■
	(FACILITIES)	6	⊞	⊞			■		⊞	⊞	⊞	■		■	⊞	⊞	⊞	⊞				⊞	⊞		⊞	⊞	
CONVENIENCE	(INTERNAL)	7					■	⊞			⊞	■	■	■			⊞	⊞		⊞	⊞						
	(EXTERNAL)	8	■				■	⊞			⊞		■		⊞							⊞	⊞	⊞	⊞	⊞	⊞
STIMULUS		9	⊞				⊞	⊞	⊞	⊞					⊞				⊞	⊞	⊞	⊞	⊞		⊞	⊞	
ADAPTABILITY	(FUNCTION)	10		■			■	■	■				⊞		■												
	(OVERSIZE)	11		■					■	■		⊞		⊞	■												
	(OTHER USES)	12		■			■	■	■				⊞		■	■	■	■	■	■	■	■	■	■	■	■	■
CONTINUITY	(TIME)	13		⊞			⊞	⊞		⊞	⊞	■	■	■					⊞	⊞	⊞						
	(SPACE, MET.)	14		⊞			⊞	⊞						■			⊞	⊞	⊞	⊞	⊞						
	(SPACE, COM.)	15		⊞			⊞	⊞	⊞					■		⊞		⊞		⊞	⊞						
	(SPACE, SECTOR)	16		⊞			⊞	⊞	⊞					■		⊞	⊞				⊞						
IDENTITY	(METROPOLITAN)	17									⊞			■	⊞	⊞				⊞	⊞						
	(COMMUNITY)	18							⊞		⊞			■	⊞	⊞	⊞		⊞		⊞						
	(SECTOR)	19							⊞		⊞			■	⊞	⊞	⊞	⊞	⊞	⊞							
VARIETY	(METROPOLITAN)	20						⊞		⊞	⊞			■											⊞		
	(COMMUNITY)	21					■	⊞		⊞	⊞			■												⊞	
	(SECTOR)	22		■			■			⊞				■													⊞
CHOICE	(METROPOLITAN)	23						⊞		⊞	⊞			■								⊞					
	(COMMUNITY)	24					■	⊞		⊞	⊞			■									⊞				
	(SECTOR)	25		■			■	⊞		⊞				■										⊞			



LEGEND

▦ muséums, galleries, etc.

○ colleges, research, etc.

▨ water facilities, cemetaries, etc.

DIAGRAM 9.
POSSIBLE LOCATIONS FOR
VARIOUS KINDS OF INSTITUTIONS

INSTITUTIONS

■ CONFLICTING GOALS

⊞ COMPLEMENTARY GOALS

HEALTH · EFFICIENCY · AMENITY · CONVENIENCE · STIMULUS · ADAPTABILITY · CONTINUITY · IDENTITY · VARIETY · CHOICE

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HEALTH AND SAFETY		1					⊞	⊞	⊞	⊞	⊞																
EFFICIENCY		2					■		■	⊞		⊞	■				■	■					■	■		■	■
		3																									
		4																									
AMENITY	(PLEASANTNESS)	5	⊞	■				■	■	■	⊞												■	■		■	■
	(FACILITIES)	6	⊞				■			⊞	⊞											⊞		■	⊞		■
CONVENIENCE	(INTERNAL)	7	⊞	■			■				■		■														
	(EXTERNAL)	8	⊞	⊞			■	⊞			⊞		■														
STIMULUS		9	⊞				⊞	⊞	■	⊞					⊞				⊞	⊞	⊞	⊞			⊞		
ADAPTABILITY	(STRUCTURAL)	10		■											■				■	■	■						
	(OVERSIZE)	11		■					■	■																	
		12																									
CONTINUITY	(TIME)	13									⊞	■										⊞			⊞		
	(SPACE, MET.)	14															⊞	⊞									
	(SPACE, COM.)	15		■												⊞		⊞									
	(SPACE, SECTOR)	16		■												⊞	⊞										
IDENTITY	(METROPOLITAN)	17									⊞	■															
	(COMMUNITY)	18									⊞	■															
	(SECTOR)	19									⊞	■															
VARIETY	(METROPOLITAN)	20						⊞			⊞														⊞		
	(COMMUNITY)	21		■			■																			⊞	
	(SECTOR)	22		■			■	■																			⊞
CHOICE	(METROPOLITAN)	23						⊞			⊞											⊞					
	(COMMUNITY)	24		■			■																⊞				
	(SECTOR)	25		■			■	■																⊞			

WORK AREAS - CBD

■ CONFLICTING GOALS

⊞ COMPLEMENTARY GOALS

			HEALTH	EFFICIENCY			AMENITY		CONVENIENCE		STIMULUS	ADAPTABILITY			CONTINUITY				IDENTITY			VARIETY			CHOICE		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HEALTH AND SAFETY		1					⊞				⊞				■												
EFFICIENCY	(LAND USE)	2							⊞				⊞	■		⊞											
	(SCALE)	3							⊞	⊞				■	⊞	⊞											
		4																									
AMENITY	(PLEASANTNESS)	5	⊞																								
	(ANONIMITY)	6																									
CONVENIENCE	(INTERNAL)	7			⊞						⊞			■		⊞											
	(EXTERNAL)	8			⊞						⊞																
STIMULUS		9	⊞						⊞	⊞					⊞				⊞			⊞			⊞		
ADAPTABILITY	(STRUCTURAL)	10													■				■								
	(RENEWAL)	11		⊞																							
	(OVERSIZE)	12		■	■				■	■						■											
CONTINUITY	(TIME)	13	■		⊞					⊞	⊞	■				⊞			⊞			⊞			⊞		
	(SPACE)	14		⊞					⊞	⊞				■	⊞				⊞								
		15																									
		16																									
IDENTITY		17									⊞	■			⊞	⊞											
		18																									
		19																									
VARIETY		20									⊞				⊞										⊞		
		21																									
		22																									
CHOICE		23									⊞				⊞							⊞					
		24																									
		25																									

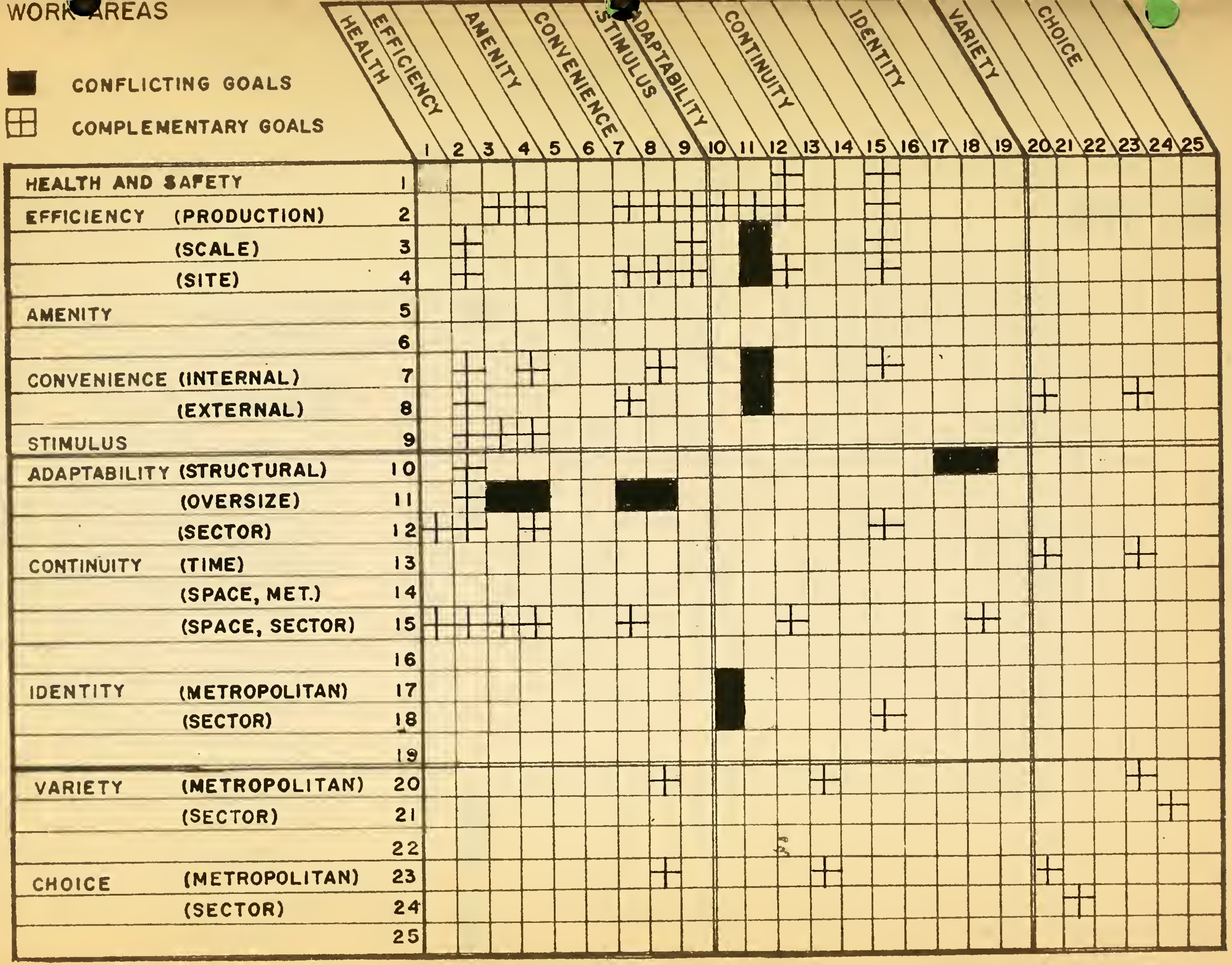
WOR AREAS - SHOPPING

■ CONFLICTING GOALS

⊞ COMPLEMENTARY GOALS

			HEALTH	EFFICIENCY			AMENITY		CONVENIENCE		STIMULUS	ADAPTABILITY			CONTINUITY				IDENTITY			VARIETY			CHOICE		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HEALTH AND SAFETY		1					⊞		⊞		⊞		⊞					⊞									
EFFICIENCY	(SELLER)	2				⊞				⊞	⊞		⊞	■				⊞									
	(BUYER)	3							⊞	⊞	⊞		⊞	■				⊞						■			⊞
	(SCALE)	4		⊞					⊞					■				⊞									
AMENITY		5	⊞						⊞		⊞							⊞			⊞						
		6																									
CONVENIENCE	(INTERNAL)	7	⊞		⊞	⊞	⊞				⊞		⊞	■				⊞						■			
	(EXTERNAL)	8		⊞	⊞						⊞																
STIMULUS		9	⊞	⊞	⊞		⊞		⊞	⊞								⊞			⊞	⊞			⊞		
ADAPTABILITY	(STRUCTURAL)	10																	■	■	■			■			
	(SECTOR)	11	⊞	⊞	⊞				⊞									⊞									
	(OVERSIZE)	12		■	■	■			■																		
CONTINUITY	(TIME)	13																									
	(SPACE, MET.)	14																									
	(SPACE, COM.)	15																									
	(SPACE, SECTOR)	16	⊞	⊞	⊞	⊞	⊞		⊞		⊞		⊞								⊞						
IDENTITY	(METROPOLITAN)	17										■															
	(COMMUNITY)	18										■															
	(SECTOR)	19					⊞				⊞	■						⊞									
VARIETY	(METROPOLITAN)	20									⊞														⊞		
	(COMMUNITY)	21																								⊞	
	(SECTOR)	22			■				■			■															⊞
CHOICE	(METROPOLITAN)	23									⊞											⊞					
	(COMMUNITY)	24																					⊞				
	(SECTOR)	25			⊞																			⊞			

WORK AREAS


■ CONFLICTING GOALS
⊞ COMPLEMENTARY GOALS
HEALTH
EFFICIENCY
AMENITY
CONVENIENCE
STIMULUS
ADAPTABILITY
CONTINUITY
IDENTITY
VARIETY
CHOICE
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
HEALTH AND SAFETY 1
EFFICIENCY (PRODUCTION) 2
(SCALE) 3
(SITE) 4
AMENITY 5
6
CONVENIENCE (INTERNAL) 7
(EXTERNAL) 8
STIMULUS 9
ADAPTABILITY (STRUCTURAL) 10
(OVERSIZE) 11
(SECTOR) 12
CONTINUITY (TIME) 13
(SPACE, MET.) 14
(SPACE, SECTOR) 15
16
IDENTITY (METROPOLITAN) 17
(SECTOR) 18
19
VARIETY (METROPOLITAN) 20
(SECTOR) 21
22
CHOICE (METROPOLITAN) 23
(SECTOR) 24
25

MOVEMENT

■ CONFLICTING GOALS

⊞ COMPLEMENTARY GOALS

			HEALTH	EFFICIENCY			AMENITY		CONVENIENCE		STIMULUS	ADAPTABILITY			CONTINUITY		IDENTITY					VARIETY			CHOICE		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
HEALTH AND SAFETY		1						⊞																			
EFFICIENCY (COST)		2					■						■		⊞								■	■		■	■
	(EFFORT)	3							⊞	⊞					⊞	⊞											
		4																									
AMENITY	(PLEASANTNESS)	5		■				⊞			⊞											⊞			⊞		
	(FRUSTRATIONLESS)	6	⊞				⊞				⊞				⊞	⊞											
CONVENIENCE	(INTRA-REGION)	7			⊞																	⊞	⊞		⊞	⊞	
	(INTER-REGION)	8			⊞																	⊞			⊞		
STIMULUS		9					⊞	⊞														⊞	⊞		⊞	⊞	
ADAPTABILITY	(NEUTRAL)	10																									
	(OVERSIZE)	11		■																							
		12																									
CONTINUITY	(TIME)	13		⊞	⊞			⊞														⊞			⊞		
	(SPACE)	14			⊞			⊞																			
		15																									
		16																									
IDENTITY		17																									
		18																									
		19																									
VARIETY	(METROPOLITAN)	20					⊞		⊞	⊞	⊞				⊞										⊞		
	(COMMUNITY)	21		■					⊞		⊞															⊞	
	(SECTOR)	22		■																							⊞
CHOICE	(METROPOLITAN)	23					⊞		⊞	⊞	⊞				⊞							⊞					
	(COMMUNITY)	24		■					⊞		⊞												⊞				
	(SECTOR)	25		■																				⊞			

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